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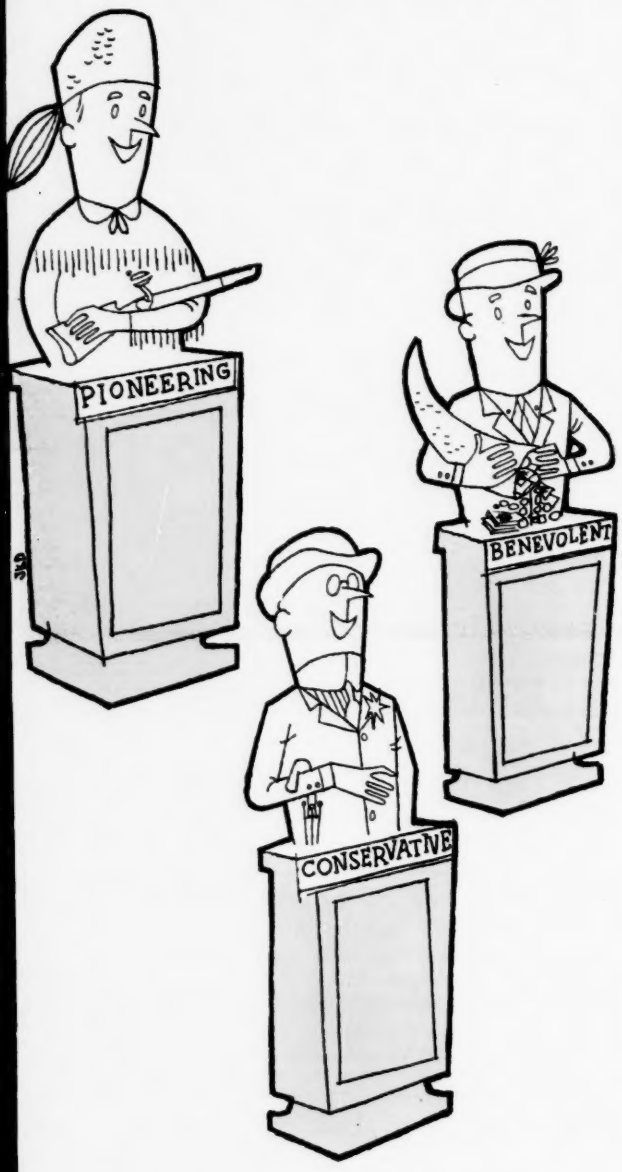
Chemical Week



Last quarter, best quarter. Experts look for business to approach '57 pace . . . . . p. 21

Your company's 'image'. A favorable one is a solid recruiting aid . . . . . p. 29

Spurt in anticancer research activity follows new agreement on patent rules . . . p. 63

Automatic bag palletization works for sugar refiner, bids for other CPI jobs . . . . . p. 55

Emulsion paint for wood exteriors bows in. Key: Dow's new acrylic latex . . . p. 93

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October 4, 1958

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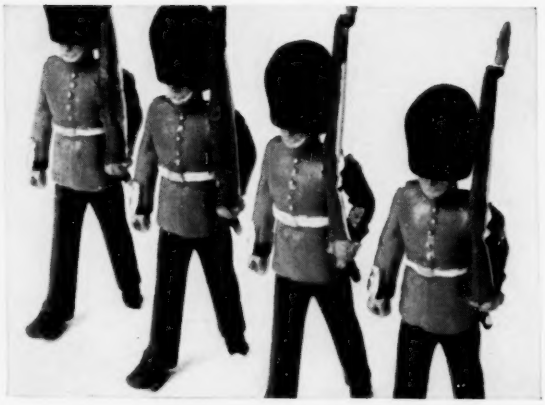

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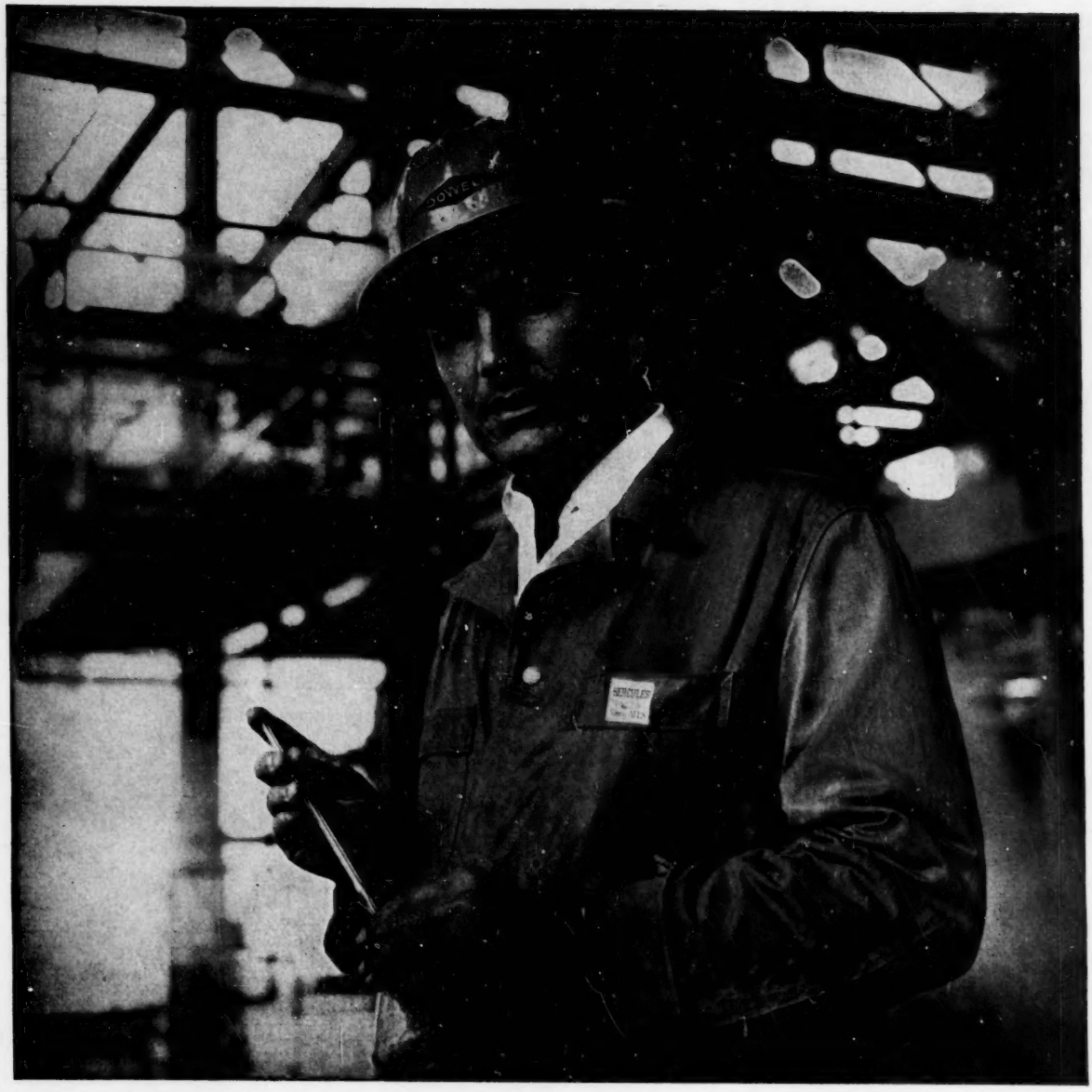

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Chemical Week

TOP OF THE WEEK

OCTOBER 4, 1958

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"Brainstorming" solves control-lab problems at American Cyanamid's Bound Brook plant ..... **p. 47**

Case histories highlight CMRA's probe of market research problems at French Lick, Ind., meeting ..... **p. 77**

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22 Merger with ICWU, bigger operating budget highlight OCAW convention program.

22 City of Buffalo previals on taxing plant's use of utilities—but may lose on future industrial growth.

23 Celanese and ICI, form new concern to produce polyester fiber.

24 Cumberland Chemical set up by Air Reduction and Mastic Tile will make polyvinyl chloride at Calvert City.

27 WASHINGTON NEWSLETTER

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35 Chamber of Commerce and process companies sound call to arms for industry to join in political campaigns.

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Latex paints for wood exteriors may be in the making—Dow launches new latex designed for prime, finish house-paint coatings.

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Fillings, false teeth, anesthetics, etc., will make up $120 million worth of dental chemical purchases in '58.

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Radioisotopic Yield Determination Helps Make

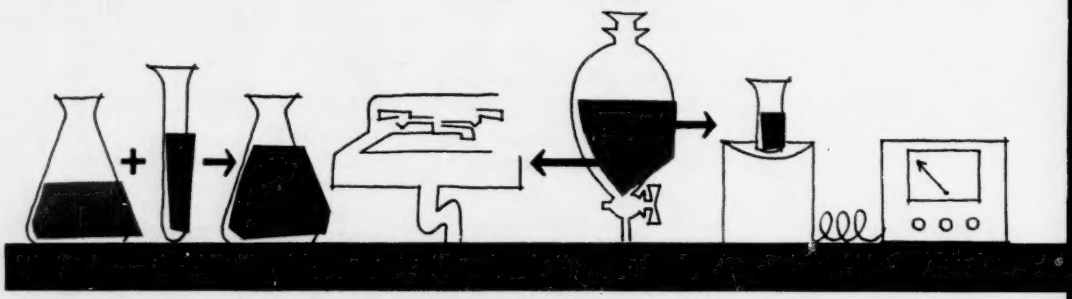
There's nothing paltry about chicken feed. Plenty of research time and money is being spent to make the modern poultry diet more productive. For instance, take the growth stimulant vitamin B_{12}, which is essential for egg production. Supplementing feed to provide 10 parts of vitamin B_{12} in 150 million parts of chicken feed can increase egg production 10% to 20%. Potentially, 20 million more eggs *per day* could be made available for the American public.

Maintaining the most effective amount of vitamin B_{12} in poultry feed requires constant quality control in the analytical laboratory. The vitamin can be measured accurately in microscopic amounts by standard chemical means only if certain interfering materials in the B_{12} are eliminated. But, in removing these, an unknown and variable amount of the vitamin may be lost along the way. *Radioisotopic yield determination** really helps here.

If a minute known amount of *radioactive vitamin* B_{12} is added to the crude sample before purification is begun, any loss during the analysis gives a corresponding loss in radioactivity. Simple measurement of the radioactivity of the purified sample provides a correction factor which is the missing link in the quantitative analysis.

Radioisotopic yield determination is widely applicable to industrial analytical problems. It is simple, inexpensive, and precise. It can be used for any analysis in which a radioactive

**We have prepared a technical description of procedures used in radioisotopic yield determination and will be glad to send you a copy on request. Ask for Technical Bulletin No. 1.*



1. Mix small known amount of radioactive compound with crude sample.

2. Purify sample to remove interfering substances. A substantial loss of the sought compound is permissible.

3. Measure amounts of radioactivity in original and purified samples to determine loss in the purification process.

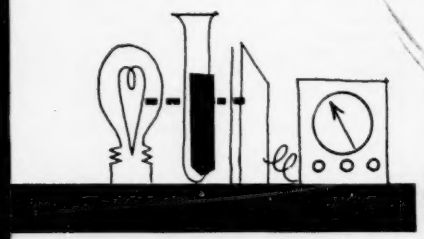
Here is a modern, industrial analytical laboratory with Nuclear-Chicago instrumentation carefully selected to handle a wide range of laboratory and plant problems and to provide the ultimate in automatic sample handling, recording and read-out convenience. This complete radioisotope laboratory is available at surprisingly low cost ($9,000—$10,000). Instrumentation systems for radioisotopic yield determination, specifically tailored to your needs, can be purchased for $2,000 or less.

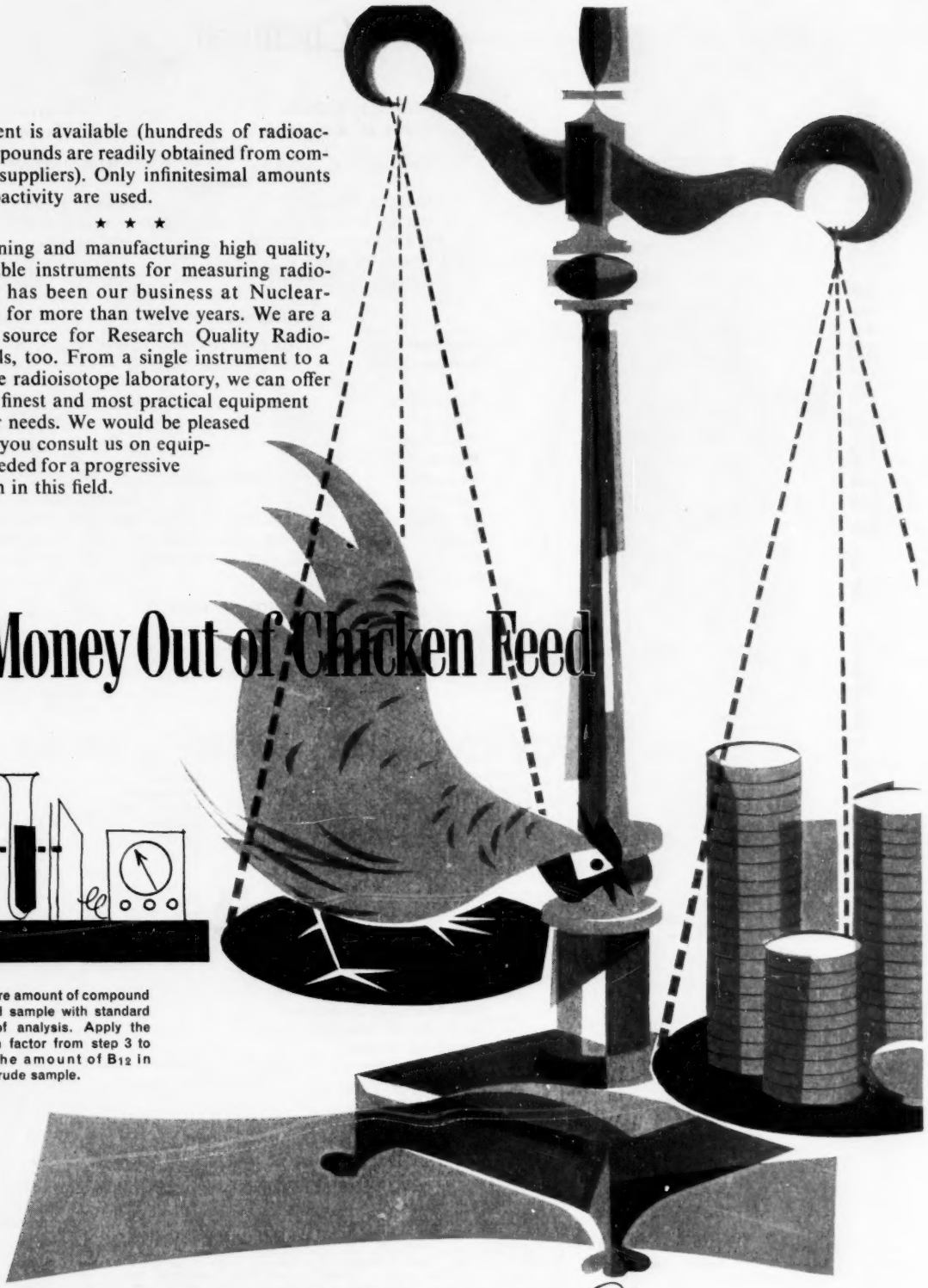
constituent is available (hundreds of radioactive compounds are readily obtained from commercial suppliers). Only infinitesimal amounts of radioactivity are used.

★ ★ ★

Designing and manufacturing high quality, dependable instruments for measuring radioactivity has been our business at Nuclear-Chicago for more than twelve years. We are a leading source for Research Quality Radiochemicals, too. From a single instrument to a complete radioisotope laboratory, we can offer you the finest and most practical equipment for your needs. We would be pleased to have you consult us on equipment needed for a progressive program in this field.

Big Money Out of Chicken Feed





4. Measure amount of compound in purified sample with standard method of analysis. Apply the correction factor from step 3 to obtain the amount of B_{12} in original crude sample.

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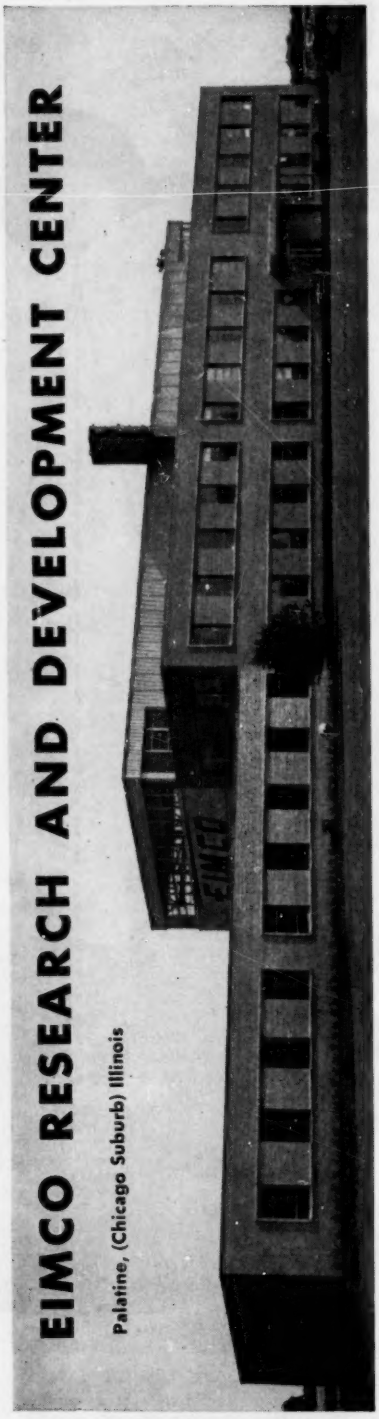

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OPINION

Who Pioneered Beryllium?

TO THE EDITOR: . . . You carry an item (*Aug. 2, p. 48*) stating that "the first privately owned beryllium fabricating plant in the U.S." was put into operation at Hazelton, Pa., by The Beryllium Corp., Reading, Pa., last week.

Actually, this is not at all true, as The Brush Beryllium Co. installed its QMV beryllium fabrication plant and developed the QMV fabrication process in 1946, this first plant being entirely owned by The Brush Beryllium Co. Our first large commercial fixed-price order from this plant was in '46, in an amount close to $700,000.

We have since greatly expanded this facility, with the cooperation and assistance of Atomic Energy Commission, and this company is now the world's largest producer and fabricator of beryllium metal shapes, having been practically the sole supplier to AEC all these years. . . .

N. W. BASS
Vice-President
The Brush Beryllium Co.
Cleveland

The Beryllium Corp. replies, "We stand as the first to go it alone into the commercial fabrication of beryllium." Each company, moreover, claims to be the "world's largest producer."—ED.

Japanese Hypochlorite

TO THE EDITOR: With reference to your article on pool additives (*July 19, p. 69*), . . . our company exclusively represents a well-known Japanese producer of calcium hypochlorite. We maintain stocks in many strategic areas.

M. A. MIDDLEMAN
Conray Products Co.
New York

Polypropylene Pipe

TO THE EDITOR: The comment in the Market Newsletter (*Aug. 30, p. 53*) referring to the reluctance of some pipe makers to produce polypropylene "too fast before the resin's chemical and physical properties are adequately studied" is not taking into account the 25 years of research and development of plastic pipe in every phase of piping systems and the fact that polypropylene is a first cousin to polyethylene, of which over 50% of today's plastic pipe is manufactured. Four years of testing polypropylene in installed piping systems with laboratory control has proved it is a superior pipe material.

The lusty and rapidly expanding plastic pipe industry that has grown from an experiment to a major industry in less than a decade does not wait for timid souls.

MARTIN USAB
Chemtrol
Lynwood, Calif.

The opinions we expressed were not our own, but those of many industry experts to whom we talked. Some of them felt that polypropylene piping requires additional development work, whereas others—like Reader Usab—have already done a great deal of research and testing.—ED.

More Package Plants

TO THE EDITOR: Your CW Report on package plants (*Sept. 20, p. 101*) . . . was excellent, but I'm sure there are more such plants than you listed.

A. R. DEUTSCH
Brooklyn, N.Y.

Reader Deutsch is right. CW *and Author Mahoney contacted all engineering-construction firms, but several chose not to list their available package plants.*—ED.

MEETINGS

Paint Industries Show, 1958, and annual meeting of the Federation of Paint and Varnish Production Clubs, Cleveland Public Auditorium, Cleveland, Oct. 6-8.

American Institute of Mining, Metallurgical and Petroleum Engineers, solid-fuels conference, Chamberlain Hotel, Old Point Comfort, Va., Oct. 9-10.

Packaging Institute, 20th annual forum, Edgewater Beach Hotel, Chicago, Oct. 13-15.

American Institute of Consulting Engineers, annual dinner, Waldorf-Astoria Hotel, New York, Oct. 14.

Institute of Management Sciences, fifth annual international meeting; theme: science in management, modern tools for today's executive; Sheraton Hotel, Philadelphia, Oct. 16-18.

Salesmen's Assn. of the American Chemical Industry, annual sales clinic, Roosevelt Hotel, New York, Oct. 20.

VIEWPOINT

GET OUT and politick! That's the word (*see p. 35*) from the U.S. Chamber of Commerce, which urges its businessmen-members to work actively in behalf of candidates who are sympathetic to the business community's point of view.

The chamber's policy statement follows upon Gulf Oil Corp.'s declaration of its "determination to take an increasingly active interest in practical politics," especially in areas where it can oppose "labor's mounting political power."

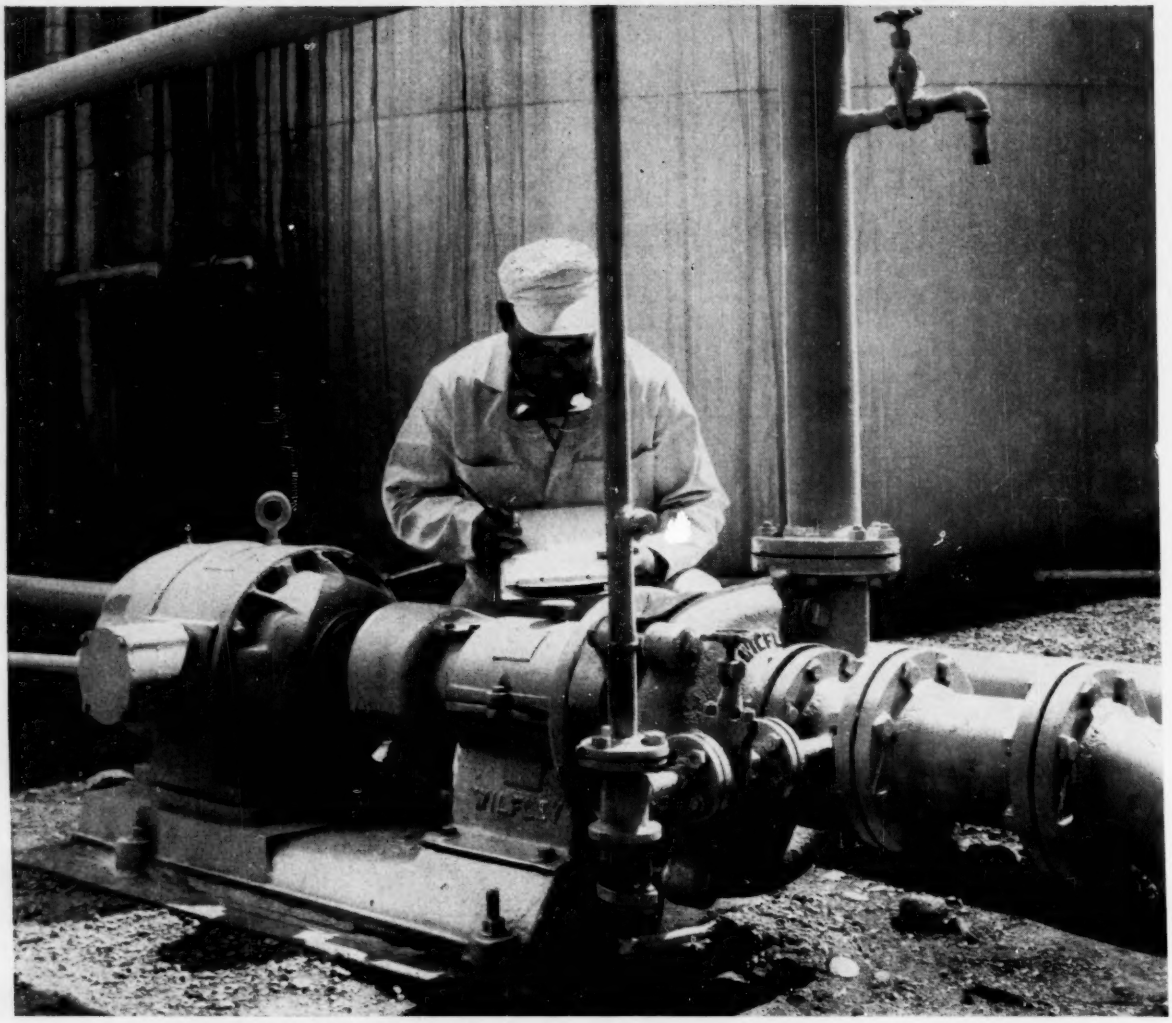
This is all to the good. Unions openly support "liberal" candidates who can be counted on to maintain and increase unions' power, and the employees get most of their politico-economic information from heavily slanted union newspapers.

But a word of caution is in order. Management's role should be enlightenment—period. The employer-employee relationship is always in delicate balance, and the opportunity for management to exercise its authority is always present. Under such circumstances any hint of coercion is bound to boomerang. One remembers the last senatorial victory of Robert A. Taft in heavily unionized Ohio. Many reasons have been advanced for his triumph, but it seems clear that one factor was the defection from the Democratic party of union members in rebellion against the heavy-handed "party line" of their union leadership. Management must resist the temptation to try to impose the same kind of monolithic conformity.

If a rallying point is needed, management might try to rescue from opprobrium that fine old word "conservative." Conservatism proves all things, and holds fast that which is good. It welcomes progress, but recognizes that change isn't inevitably progressive. It holds that every material gain has its price tag; it advocates fiscal prudence; and it dignifies man by insisting on man's personal responsibility for his own affairs. It's a good story—one that should be told louder and oftener.

H. E. Johnson

Editor-in-Chief



Operator checks Ni-Resist pump at Pennsalt Chemical's Portland plant. This particular unit was manufactured by A. R. Wilfley & Sons, Inc. of Denver, Colorado, and pumps caustic at a concentration of 50%. The Duriron Company, Inc. of Dayton, Ohio, also supplied Ni-Resist pumps for the plant.

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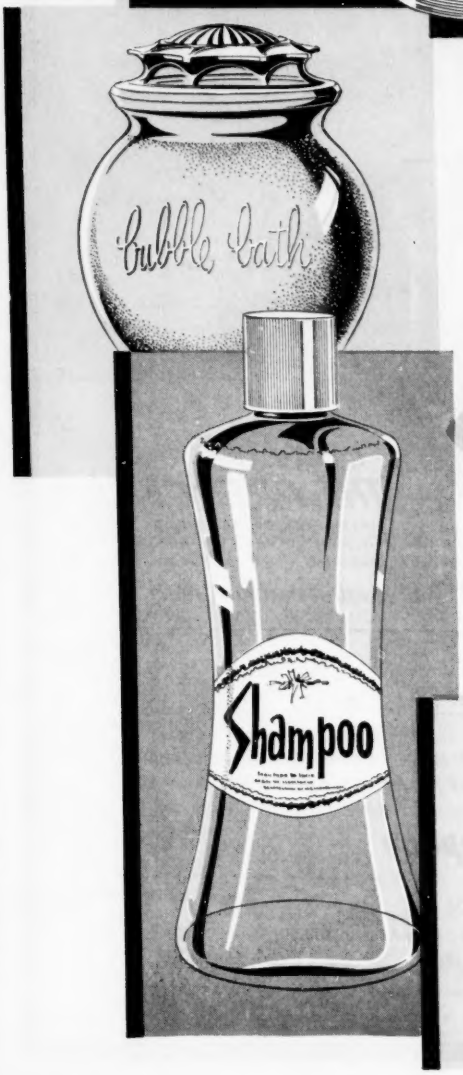

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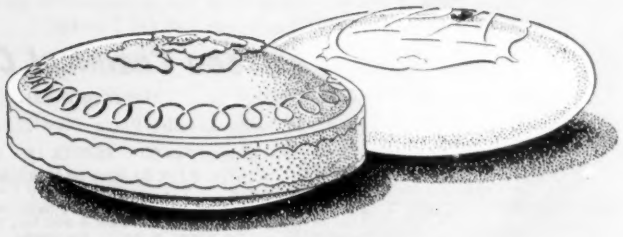

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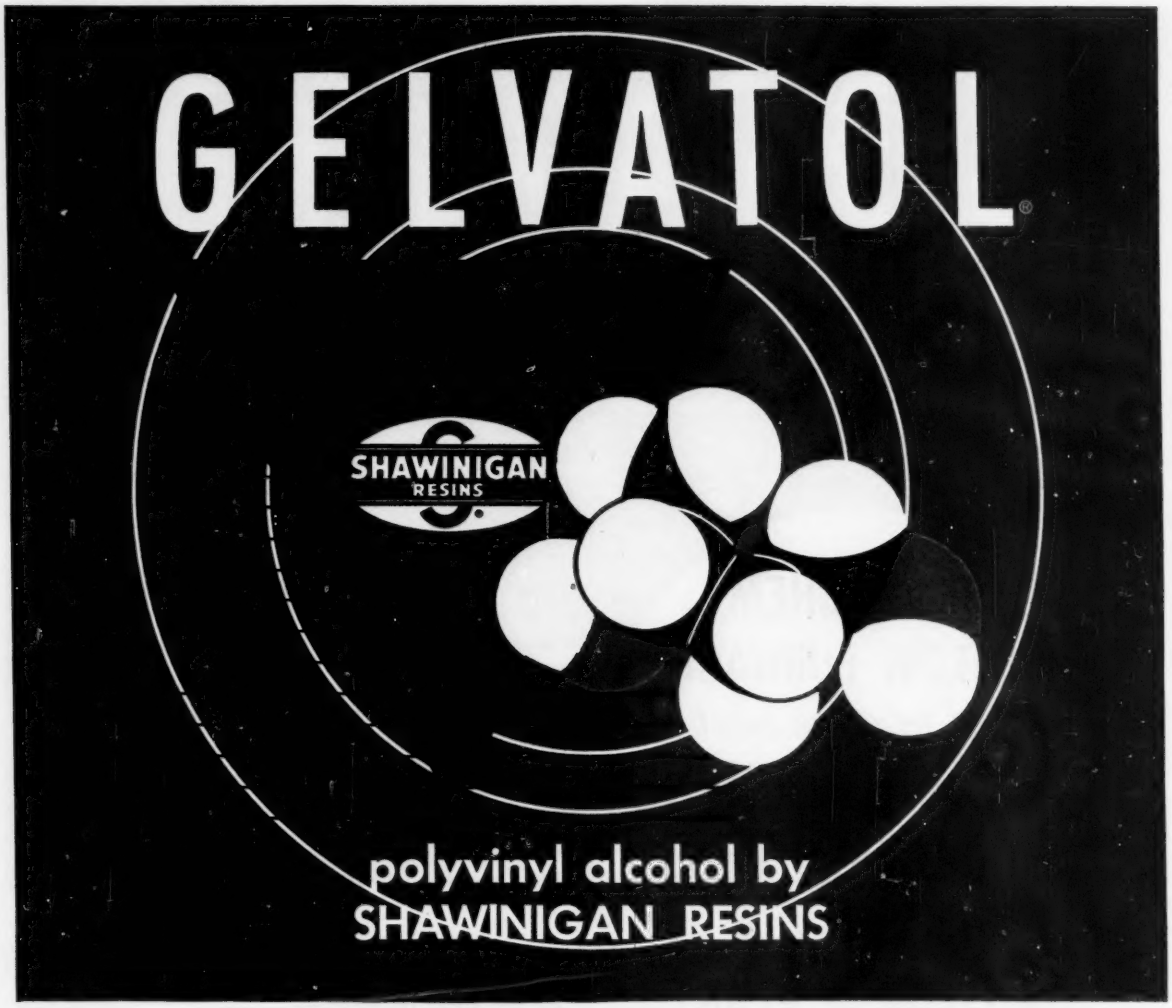

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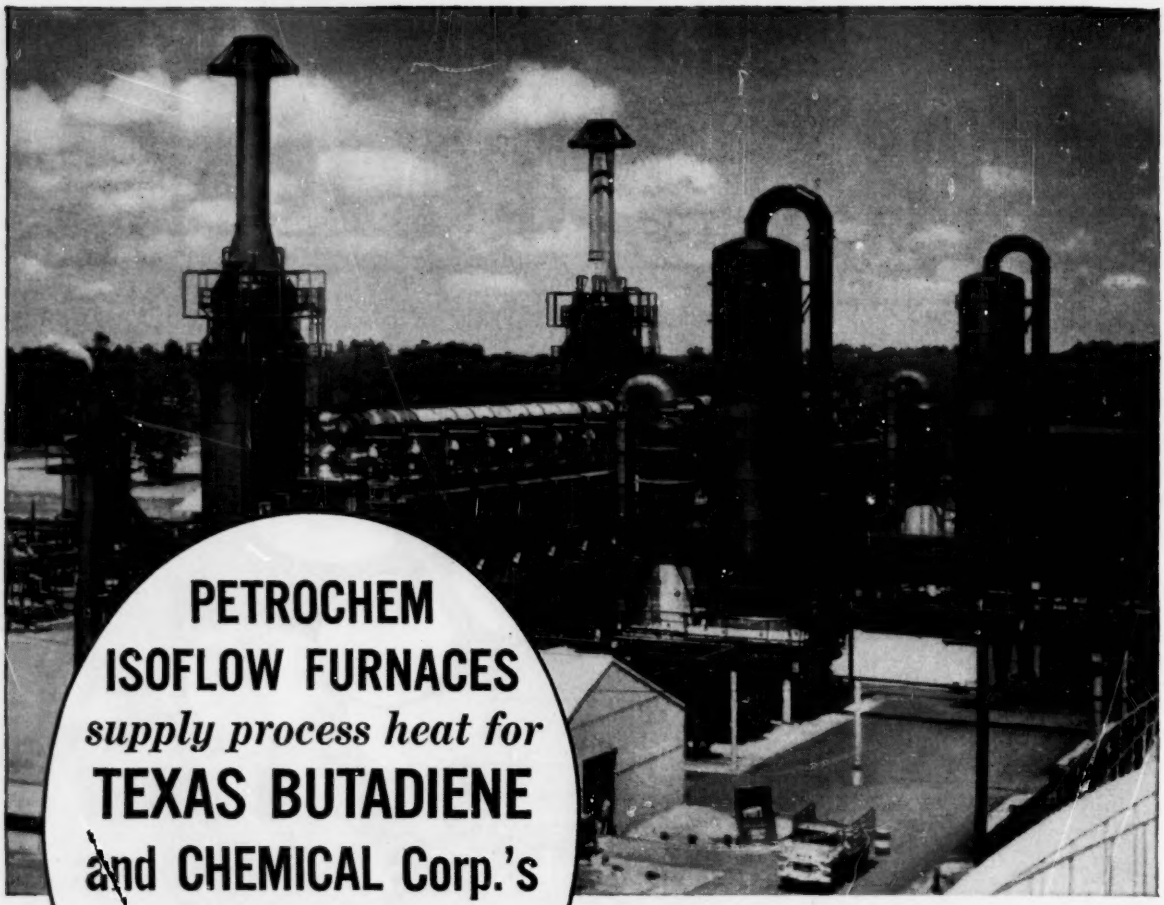

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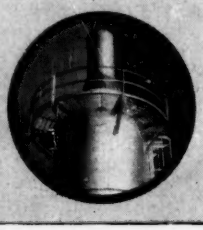

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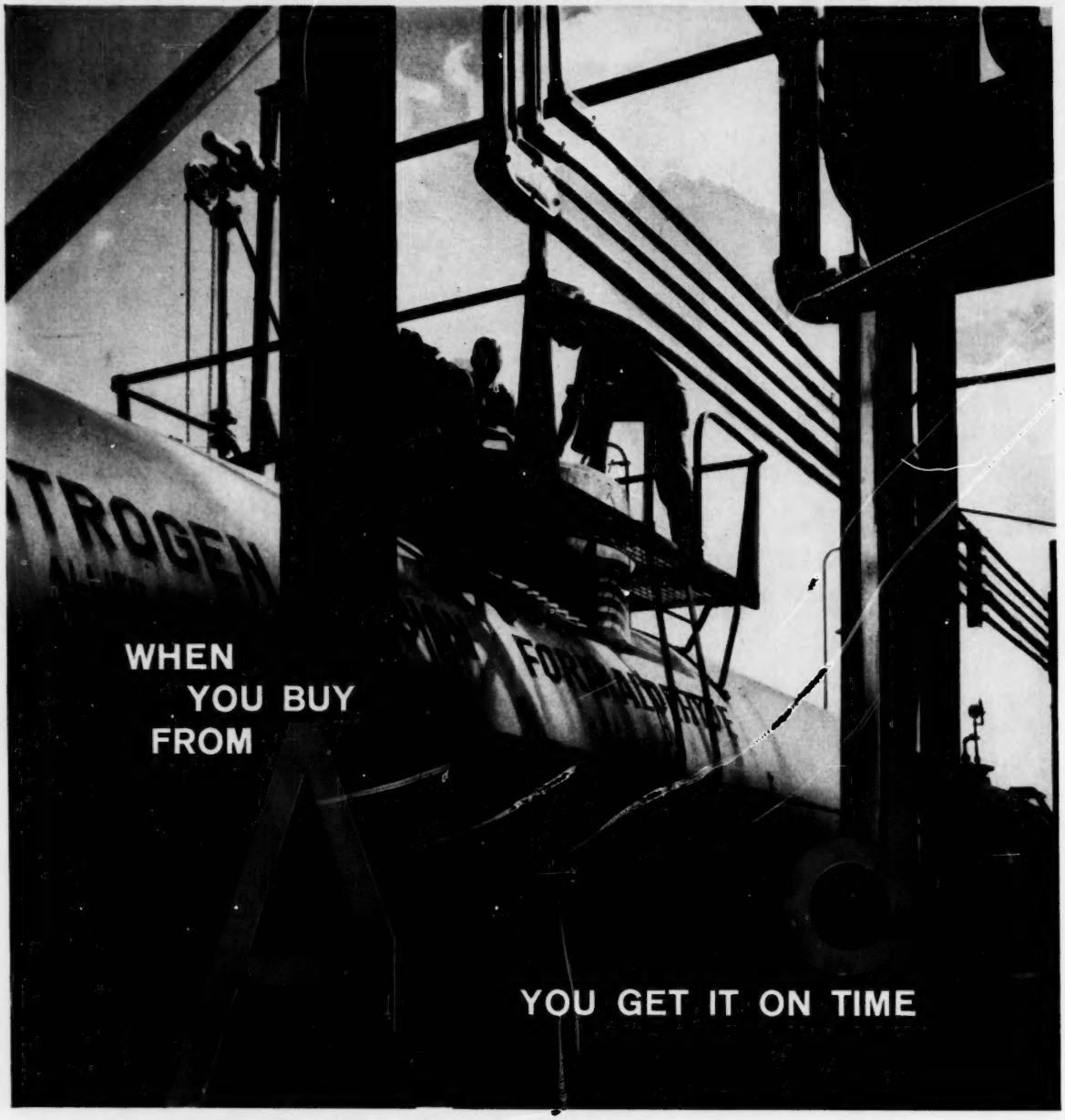

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Business Newsletter

CHEMICAL WEEK
October 4, 1958

Parke, Davis's stock-split plans, and Olin Mathieson's sale of Thiokol stock riveted Wall Streeters' attention late last week.

The Parke, Davis split proposed by directors would be on a three-for-one basis. A special meeting has been called for Nov. 12 to ask shareholders' approval. But reaction to the P-D announcement was immediate, the stock price soaring seven points to $104/share within a few hours. At press time, the firm's stock was selling for $109.50/share.

The Thiokol shares offered by OM were acquired when OM sold to Thiokol its 50% interest in Reaction Motors (*CW Business Newsletter, Feb. 8*). Offering price was $53.75 per share. Total number sold: 97,714. Rights attached to the stock, notably the option to purchase one additional Thiokol share for each 12 held (*CW Business Newsletter, Sept. 27*), are being sold separately. OM will use the proceeds to help pay off present indebtedness.

•

American Cyanamid will pick up the tab for charges levied on its Aureomycin feed-additive customers by Food & Drug Administration. Under a ruling adopted last month, FDA has been charging feed manufacturers a $5 fee each time they apply for approval of a new formula or new application for feeds containing certified antibiotics. Aureomycin is certified by FDA's antibiotics section in addition to its original clearance by FDA's new-drug section. Some competing products—such as Pfizer's Terramycin—are sold only under the new-drug clearance. Saving feed producers the extra charge, Cyanamid believes, will avoid discrimination against its own certified product.

•

The Flintkote Co. (New York) continues its expansion drive with the purchase of Orangeburg Manufacturing Co. (Orangeburg, N.Y.), producer of bituminized fiber pipes, conduits, and polyethylene pipe. Orangeburg's sales last year: $12 million. Directors of both companies have approved the merger terms. In acquiring the Orangeburg Company, Flintkote will issue 132,416 shares of a new class of $4.50 Series A second-preferred (par $100) stock, convertible into Flintkote common stock at $56/share.

This is Flintkote's fourth acquisition this year. The others: Utah Lime and Stone Co.; Packer Prefabricated Chimney (part of C. A. McRobert & Sons Ltd., Montreal); Hankins Container Co.—an acquisition that must be approved with the Orangeburg deal at a stockholder's meeting Nov. 25.

•

Typifying the pickup in synthetic fiber sales: American Enka Corp.'s third-quarter profits, which have been put into the black by strong rayon and nylon sales. The '58 third-quarter sales were above the level of third-quarter '57 sales and well above the second-quarter '58 operating

loss. Sales for the three months ending in September totaled $14.9 million; profits, $149,000 (11¢/share). Last year's third-quarter sales were $14.7 million; profits, $109,000, or 8¢/share. Nine-month earnings slipped to $154,000 this year, compared with $682,000 for the same period in '57.

President J. E. Bassill reports that sales of nylon and rayon monofilament (including tire-cord yarn) reached record levels, with monofilament facilities running at capacity. But rayon staple (a short-length fiber) operations still lag. "It is hoped," Bassill says, "that the dumping of foreign staple can now be prevented as a result of recent amendments to the federal antidumping act, thus bringing about a healthier domestic market."

•

The status of Olin Mathieson's African alumina venture, arising from French Guinea's vote for independence last Sunday, will likely remain unclear for some time.

The new nation's government may have difficulty in providing economic stability for the $135-million alumina and bauxite project, in which OM holds 53½% interest (*CW Business Newsletter, Aug. 16*).

•

Construction cutbacks for Du Pont? The company has delivered dismissal notices to about 200 employees (about 6%) in its engineering department including engineers, semitechnical, clerical and field personnel, mostly from the design section. Contract work—originally farmed out to steady the department's work load—has been cut. The moves, Du Pont says, simply reflect "a temporary lull in the work load."

•

Several top executive changes make news this week.

William Wilson, 42-year-old financial expert brought in last year as president of Virginia-Carolina Chemical Co., has resigned. Principal stockholder Justin Potter, elected board chairman in May, takes over as chief executive. Wilson remains as a director-consultant. Reason for the change: a disagreement between Potter and Wilson as to extent of Wilson's authority.

John Collyer, for 19 years chief executive officer of B. F. Goodrich Co., has relinquished his post to J. Ward Keener, president. Collyer, 65, will continue as board chairman.

•

The U. S. Justice Dept. still insists that Du Pont should sell its 23% stock interest in General Motors, holding that this is the most effective way to carry out the Supreme Court's antitrust decision. And the Justice Dept.—in papers filed late last week in federal district court at Chicago—denies Du Pont's assertion that sale of the GM shares would undercut GM and Du Pont stock prices. The government notes that GM itself is a big buyer of its own stock (for employees' stock options).

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In some cases, CARBIDE has developed a plasticizer for a single use. For example, FLEXOL Plasticizer 3GH is used for the polyvinyl butyral interlayer in safety glass. This plasticizer increases adhesion and eliminates the need for edge sealing. Besides FLEXOL 3GH, CARBIDE produces six other special-purpose plasticizers, FLEXOL 3GO, 4GO, 8N8, R-2H, and B-400.

All 15 FLEXOL plasticizers are available from distribution points throughout the country. And, because of CARBIDE's wide variety of plasticizers, you can take advantage of the savings from combination tank car, tank wagon, and drum orders in LCL or carload orders. For more information on FLEXOL plasticizers, call the nearest CARBIDE office or write Department B, Union Carbide Chemicals Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York.

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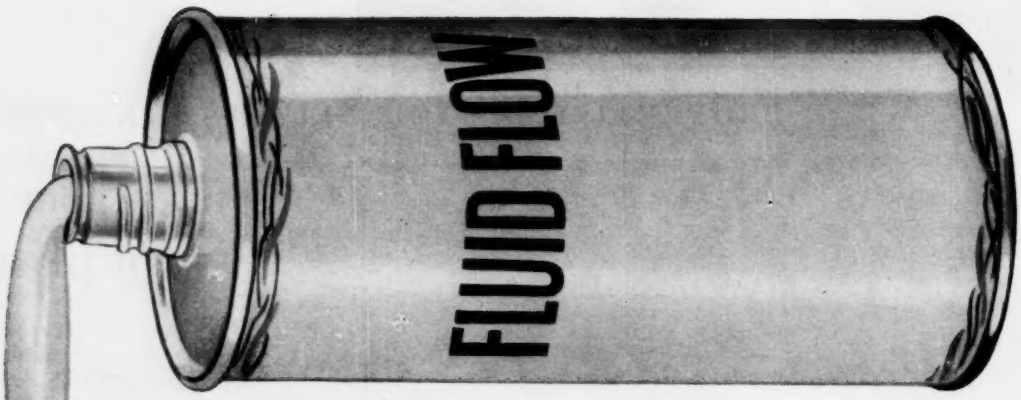

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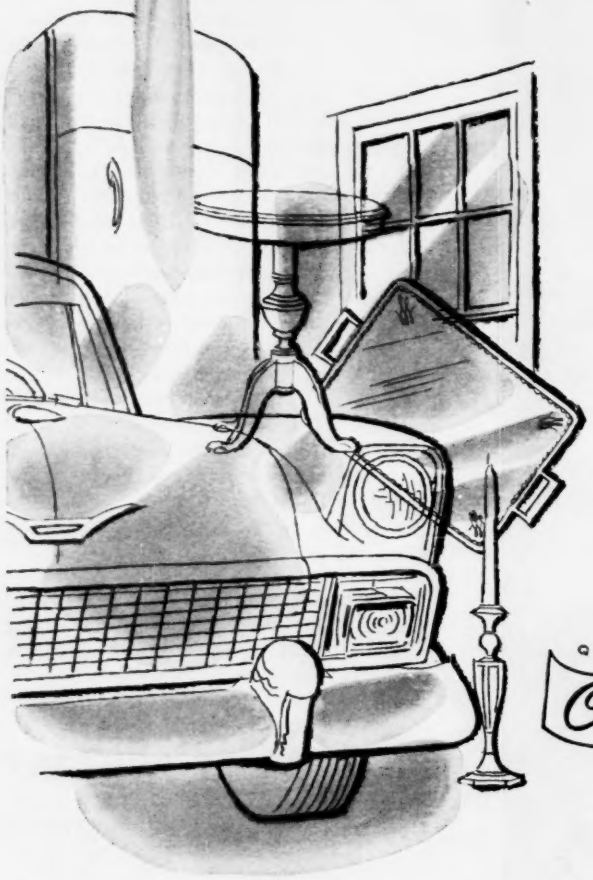
BEST FOR *Polishes and Waxes*



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Unsurpassed product protection insured by specially developed enamel linings.

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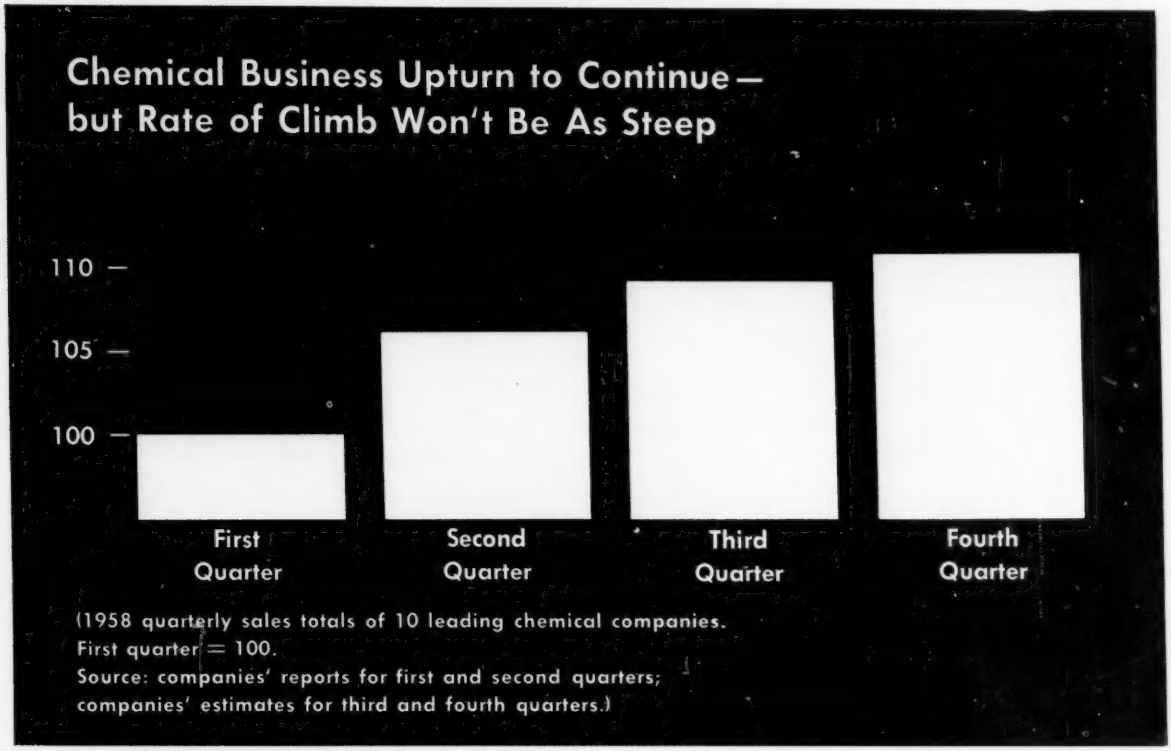
Chemical Business Upturn to Continue—
but Rate of Climb Won't Be As Steep
110
105
100
First Quarter
Second Quarter
Third Quarter
Fourth Quarter
(1958 quarterly sales totals of 10 leading chemical companies.
First quarter = 100.
Source: companies' reports for first and second quarters;
companies' estimates for third and fourth quarters.)

Fourth-quarter Outlook: Further Gentle Rise

Chemical sales volume is still rising, and fourth-quarter business will be the best this year (chart, above). But the upturn that started last spring is now proceeding on a more gradual ascent.

This is the boiled-down summation of the replies from 10 leading U. S. chemical companies* to a *CW* questionnaire about prospects for the three-month period that starts this week. Allowing for seasonal factors, all 10 of these replies are optimistic; four companies expect fourth-quarter sales this year to be higher than last year's October-December figures, and the other six all expect to come close.

For these 10 companies as a whole, third-quarter sales are expected to be about $1.24 billion, up $32 million—a 3% increase—from their second-quarter total. The fourth quarter is expected to bring an additional $16-million sales gain. This would make their 12-month sales total $4.84 billion—a drop of only 6.2% from the record total of $5.16 billion, reached last year.

Production Increasing: Seven of the companies responded to a question about their fourth-quarter production plans, and all seven stated that they intend to increase output. Relative to production levels during the second quarter this year, these companies will boost output by amounts ranging up to 21%.

While utilization of capacity in the second quarter was between 58% and 80%, the anticipated range for the fourth quarter is 65-85%.

Six of the 10 companies say their capital spending during the last half of this year will be about equal to expenditures during the first six months. Two plan to increase capital spending (one by 25%); the other two will have lower plant and equipment investments this half. (One of these companies explained that this was because major expansion projects are now complete.)

Auto Market Looms Largest: Nearly all of the respondents say they expect business to keep right on picking up in most sectors of the national economy. But at least five of the companies are banking very strongly on production of 1959-model autos to generate a big demand for the various chemicals that go into automotive items—paints and finishes, tires, upholstery, special metals and plastics.

Three companies are looking for better things in textile markets; others speak of hopes for bigger deliveries to customers in oil refining, pulp and paper, plastics molding, protective coatings, appliances and construction industries. Two mention improved prospects for sales to makers of detergents and other nondurable goods purchased directly by consumers.

Nine concerns say they do not expect to make any significant price

*Allied Chemical, American Cyanamid, Dow, Du Pont, General Aniline & Film, Hercules Powder, Hooker Chemical, Monsanto, Stauffer, and Wyandotte.

changes between now and Dec. 31; the other firm has "no comment."

Customers' Inventories Lower: Up until just a few weeks ago, one sales vice-president told *CW*, customers often called in about the 15th of the month to cancel orders or to stretch out delivery schedules on orders placed at the start of the month. "Now, to the contrary, we're getting advance dates set up on contracts and we're getting spot orders for immediate shipments—all of which is very encouraging because it indicates a definite pick-up in demand," he reports.

A marketing director estimates that customers' inventories have dwindled since last winter, and that industrial production is generally about halfway back to the level at which it stood before the recession started some 13 months ago.

Dow is one company willing to be quoted by name on its predictions. It expects that in each of the first two quarters of its current fiscal year (the three months ending Aug. 31 and Nov. 30), sales will amount to about $165-170 million—10% higher than in its March-May quarter. Dow bases this forecast on the assumption of continued improvement in the general economy, and expects its own sales uplift will extend throughout its entire product line.

Boost from Steel: It appears that chemical sales will benefit both from the union settlements in the auto industry and from the '59 strike threat in the steel industry. Agreement in the auto industry—if Chrysler and General Motors follow the Ford settlement pattern—is expected to enable the big companies to turn out cars at a fast clip (if demand develops); possibility of a strike against major steel producers next year may lead to a spurt in steel output between now and summer. At any rate, the steel industry has indicated that it expects to be producing at about 75% of capacity next year, compared with a '58 average that may end up at about 55%.

Principal factors holding down chemical companies' profits, executives say, are the productive capacity that is currently standing idle and the companies' inability to raise prices enough to cover increased costs. In addition, many chemical firms are being hurt by competition from former customers who have decided to produce some of their own principal chemical requirements. Nevertheless, it's felt that some industrial chemical producers have a "fighting chance" to come through this year with net earnings equal to last year's. And for '59, there's considerable support for the optimistic views—such as those outlined at the National Industrial Conference Board's recent marketing conference (*CW, Sept. 27, p. 21*).

Tax Fight to Continue

Unfazed by one legal setback, Allied Chemical Corp. is planning to carry into New York state's highest court its battle against the city of Buffalo's 3% tax on bills for use of water, electric power, steam and natural and manufactured fuel gas.

In this contest, Allied is carrying the lance for various other industrial concerns that have applied for refunds totaling more than $125,000. Among these claimants: American Agricultural Chemical, Pierce & Stevens Chemical, Donner & Hanna Coke, Arner Co., Pratt & Lambert.

Allied—contending that the tax law's specification of "domestic and commercial" use of utilities should not be interpreted as including manufacturing use—lost one round in the trial court. Justice Michael Catalano ruled in favor of the city, holding that "the tax is payable on the consumption or use of the utilities . . . by all persons except those expressly exempted." He specifically ruled that manufacturers did not have such an exemption.

The utility tax—authorized by the New York state legislature in 1947 and levied by Buffalo since 1954 — has been paid by Allied and other industrial consumers under protest (*CW Business Newsletter, July 12*). Allied is asking refund of $22,312.

City attorneys, pleased with the ruling, say Catalano's decision is "conclusive" against all the refund claims. This, of course, depends on what happens in the state supreme court's appelate division.

Industrial executives and city officials both publicly deny that the utility tax—by itself—will stymie industrial development in Buffalo. Nevertheless, there's a feeling among management men that this tax is one more straw added to other regulations that—taken as a whole—may affect major expansion decisions in Buffalo.

Moving Toward Merger

Another stride toward merger of the AFL-CIO's two chemical unions was taken late last week as the 684 delegates attending the Oil, Chemical & Atomic Workers' convention in Long Beach, Calif., shouted a nearly unanimous approval of the merger timetable previously endorsed by the OCAW executive board.

The delegates took one other action that might affect the move for unification with the International Chemical Workers Union: they adopted a proposal to increase membership dues and per-capita payments. This brings OCAW's monthly per-capita tax to $2—compared with ICWU's $1.50.

Further approval of the timetable for merger into a single oil and chemical union is expected at next week's ICWU convention in Washington, D.C. If this is forthcoming, a joint committee will meet next spring to draft a constitution (*CW Business Newsletter, Sept. 13*). If that document is okayed by top officers of both unions, it will be submitted to delegates at the two unions' separate conventions. Thus, ratification could come as early as next fall.

The OCAW delegates shouted out their merger vote after a 30-minute debate that followed a strongly worded speech by Walter Mitchell, ICWU president. Mitchell stressed a recommendation for company-wide bargaining, and said that one strong, militant union is a requisite to achieving "equal pay for equal work, regardless of geographical location" (*see also CW Viewpoint, Sept. 20, p. 16*). Mitchell also held that only through merger would the unions be able to mount an effective organizing campaign.

Visitors from Italy

Visiting U.S. chemical company offices and plants this week and next are 18 members of Italy's chemical industry association, Associazione Nazionale dell'Industria Chimica (Milan). The delegation, headed by Francesco Pennaroli, came first to New York and was entertained by Allied Chemical International. Other stops will be at Rochester and Niagara Falls, N.Y., Detroit, Chicago, Cleveland, Wilmington, Del., Washington.

ICI Director Peter Allen and Celanese President Harold Blancke plan joint U.S. polyester fiber effort.

Rounding Out a Polyester Fiber Foursome

The quickening pace of polyester fiber competition was dramatized last week when Celanese Corp. of America and Imperial Chemical Industries Ltd. revealed that they had formed a jointly owned subsidiary to produce polyester fiber in the United States.

This move followed by a fortnight the debut of Eastman Chemical's Kodel polyester fiber (*CW Technology Newsletter, Sept. 20*). And six months ago, Goodyear revealed its new polyester material would be produced in fiber form as Vitel (*CW Technology Newsletter, March 29*).

These three strokes spell increased competition for Du Pont's Dacron, heretofore the only polyester fiber produced in the U.S. Kodel is already "beyond the pilot-plant stage," will turn up in apparel markets next spring. Vitel will be in limited production by Feb. 15 (apparently several months ahead of schedule). And construction of the Celanese-ICI plant is slated to start next year.

Dacron Duplicate: The Celanese-ICI entry will be called Teron. Unlike the two other newcomers, it will have a chemical composition identical to Dacron (polyethylene terephthalate). Both Dacron and ICI's polyester fiber, Terylene, are made under rights sold by the patent holder, the Calico Printers' Assn. (Lancashire, England). In 1949, ICI bought world manufacturing and sales rights, while Du Pont, in turn, purchased exclusive rights in the U.S. under Calico's U.S. patents. These patents expire in '61, leaving the way free for ICI to use its polyester know-how in the U.S., with Celanese doing the marketing chores.

Under the new agreement, the as-yet-unnamed Celanese-ICI subsidiary will be able to tap all polyester fiber research and development findings and patents of both ICI and Celanese. The joint-venture pattern, thus, is somewhat similar to that attempted earlier by ICI, in the moribund Hawthorn Chemical Corp. This firm, jointly owned by ICI and Hercules Powder, was to have manufactured methyl methacrylate in the U.S.

Capacity Sum-up: The Celanese-ICI plant is "expected to have an eventual capacity of 40 million lbs./year" of staple and filament fiber, Celanese reports. Currently, Du Pont's Dacron capacity is about 50 million lbs./year. It will reach the 100-million-lbs. range, however, when its abuilding Old Hickory, Tenn., plant—which has an "ultimate capacity" of 56 million lbs./-year—goes into operation late in '59.

Raw materials for the new plant remain a mystery. Celanese research director Robert Armstrong points out that, at present, dimethyl terephthalate (DMT) is universally used as the starting material for Dacron- and Terylene-type polyester.

If the new subsidiary follows suit, Amoco Chemicals (a Standard Oil of Indiana subsidiary) and Hercules Powder are the most likely supplier candidates. Hercules' 12-million-lbs./-year plant at Burlington, N.J., already supplies DMT for Terylene production by ICI's Canadian subsidiary, can readily boost capacity. And DMT will

be one product of Amoco's phthalic acids plant due onstream this November at Joliet, Ill. The Amoco plant uses the same process recently purchased by ICI for use in its Wilton Terylene plant. Du Pont, the only other DMT producer in the U.S., sells some of the intermediate, but is not considered as large a factor on the noncaptive market as is Hercules. Eventually, Oronite (subsidiary of Standard Oil of California) may produce DMT, a spokesman tells *CW*.

But polyester production can, of course, start with terephthalic acid. Right now, Armstrong says, material of sufficient purity isn't available. When it is, price will be the determining factor. This would again leave the door open to Hercules and Amoco.

Antitrust in Canada

Antitrust lightning strikes in Canada as well as in the U.S.; and last week, the Canadian government hurled a thunderbolt at a major chemical process industry. In Montreal, 18 pulp, paper, wood and power companies were cited for allegedly conspiring to lessen competition in pulpwood.

Sessions Judge Henri Masson Lorange issued summonses to the companies after hearing two special prosecutors charge that they conspired unlawfully to limit competition in the production, purchase, barter, sale and transportation of pulpwood in Ontario, Quebec and New Brunswick.

The charges grew out of a report compiled under the Combines Investigation Act. They deal with purchases of wood from farmers and settlers between April '47 and Dec. '54.

Eleven other companies, including a Wisconsin concern, were involved in the conspiracy, the complaint charges, but they are not named as defendants.

Fluoridation Success

Philadelphia health authorities, jubilant over better-than-hoped-for results after four years of water fluoridation, are now among the nation's staunchest fluoridation supporters.

Calling the results "truly amazing" and "of national significance," city officials reported last week that incidence of cavities in the teeth of Philadelphia's school children has been cut more than 50% and tooth extractions decreased by 43% as a direct result of putting fluorine in the city's water supply.

Public school dentists found that in 1952-53—the year before fluoridation was approved in Philadelphia—there were about 40 decayed permanent teeth among each 100 of the six-year-old children examined. During the 1957-58 school year, the finding was about 18 decayed permanent teeth per 100 children.

Says Health Commissioner James Dixon: "This reduction . . . exceeds the prediction we made in '54. We said then that reduction in dental decay would probably not be shown until '60 . . . when we hoped for a 60% decrease. On the basis of these four-year results, we now expect more of a reduction."

Besides the obvious health benefits, Dixon said, the fluoridation program means a big saving for Philadelphia's citizens. The fluoridation program costs $116,000 annually — 45¢ for each school-age child in the city. But cost of dental care, says Dixon, is being reduced more than $1 million/year.

Going to the Grocers

Aspirin is no longer a drugstore-only item in Washington, D. C. Formerly, the law required that a registered pharmacist be on duty in places selling aspirin; now it can be sold in retail grocery stores as a "patent medicine."

Less restricted sale of aspirin in the nation's capital is the result of a verdict handed down by Municipal Court Judge Harry Walker ending a legal contest between District of Columbia commissioners and the Safeway grocery store chain.

Safeway, from whose warehouse a shipment of aspirin had been seized by public officials, contended that a 50-year-old law prohibiting the sale of the material in grocery stores was inconsistent with another law allowing the sale of aspirin-containing products (e.g., Bufferin, Anacin, etc.).

Judge Walker concurred and, in a nine-page decision, ruled that "restricting aspirin sales to druggists affords no real protection to the public." Walker's ruling whittles down the group of states restricting aspirin sales to New York, New Jersey, Ohio, Minnesota.

Another for Airco

Air Reduction Co., which last week started building a new polyvinyl alcohol plant and is a prime prospect for eventual entry into the synthetic fiber business (CW Business Newsletter, Sept. 27) is back in the news this week. The company revealed plans for a $10-million vinyl chloride plant in Calvert City, Ky.

Airco and Mastic Tile Corp. are forming a jointly owned company, Cumberland Chemical Corp., to build the new unit. Total equity—put up by the two firms on a 60-40 basis—is $6 million. Additional capital will come from bank loans.

Acetylene from Airco: Scheduled for completion by early '60, the new plant will make vinyl chloride monomer and polymer, as well as substantial amounts of plasticizer. Raw material: acetylene supplied by Air Reduction.

The new facilities will be adjacent to Airco's existing chemical complex in Calvert City, which includes an acetylene generating plant, and units to manufacture vinyl acetate, methyl butynol, methyl pentynol, vinyl stearate, oxygen and nitrogen. A polyvinyl alcohol resin plant is now under construction. Management won't say where the hydrogen chloride will come from. Possibility: Pennsalt.

Chairman of the new company will be Airco President John Hill. Seymore Millstein, president of Mastic, will be vice-chairman. Air Reduction Chemical Co.'s chief executive, C. J. McFarlin, has been named as president of the firm.

Plants East and West: Mastic will use the new unit's output in the manufacture of floor coverings and other construction materials at plants in Long Beach, Calif. and Newburgh, N. Y.

Airco is not the first to consider such a joint venture with Mastic. Earlier this year, another large chemical company—not basic in acetylene—was well advanced in such negotiations. But the two couldn't agree on a suitable economic source of acetylene raw material and the deal was pigeonholed—it was never brought up again.

This time, however, plans are firm. Blaw-Knox (Pittsburgh) has contracted to design the new plant and will start construction this fall.

COMPANIES

Cumberland Corp. (Burnside, Ky.) will be reorganized under terms of a plan filed in U.S. district court at Lexington. The company, which filed a voluntary bankruptcy action earlier this year after encountering engineering difficulties in its $2.3-million charcoal and furfural plant (*CW Business Newsletter, June 15, '57*), will attempt to rehabilitate its facilities with new capitalization of $500,000.

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Quebec Iron & Titanium Corp. (Sorel, Que.) shut down its titanium separation plant Oct. 1 for an indefinite period. The firm, jointly owned by Kennecott Copper and New Jersey Zinc, blames a drop in sales for the suspension of operations.

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Merck & Co. (Rahway, N.J.) has called for Oct. 24 redemption of all outstanding shares of its $4 second-preferred stock. Each share is convertible into 2.9 shares of common until Oct. 17.

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Johns-Manville Corp. (New York) will merge with Libby-Owens-Ford Glass Fibers Co. (Toledo, O.) if L-O-F stockholders approve. The plan includes exchange of one share of Johns-Manville common stock for two and one-half shares of L-O-F.

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Standard Oil of California (San Francisco), in an unaudited report, shows sales of $751 million in the first six months of '58, down 10% from the same period of '57; earnings of $116.7 million, down 14%.

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Eagle-Picher Co. (Cincinnati) had sales of $70 million in the first nine months of '58, down 22% from the '57 period. Earnings dropped 60%, to $1.3 million.

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Smith-Douglass Co. (Norfolk, Va.) and Wilson & Toomer Co. (Jacksonville, Fla.) are considering merger possibilities. The two companies manufacture fertilizers, pesticides and other chemicals.

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The E. L. Bruce Co. (Memphis, Tenn.) proxy fight (*CW Business Newsletter, June 21*) has been settled. Bruce management and the Edward Gilbert interests will have equal representation on the 14-man board to be elected Oct. 28. Gilbert—a New York industrialist—will head an executive committee.

EXPANSION

Oxygen: Linde Co., division of Union Carbide Corp. (New York), will build and operate a 130-tons/day oxygen plant at Middletown, O. The high-purity gas, from what will be Linde's 11th on-site facility to go onstream in '58, will go to Armco Steel Corp. for enrichment of open-hearth furnace air in its Middletown Works.

Fertilizer: Western Phosphates, Inc. (Garfield, Utah), will expand its fertilizer-producing facilities with a $500,000 addition. The subsidiary of Stauffer Chemical Co. and Garfield Chemical & Mfg. Co. expects the expansion to increase phosphate ore production in a three-state area by about 10%.

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Paper: Crossett Co. (Crossett, Ark.) will soon complete a $5.3-million expansion program that includes installation of a recovery boiler for papermills, a lime kiln, storage tanks and stream pollution control facilities. Production of charcoal briquets will be doubled by other new equipment.

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Plant Site: Hercules Powder Co. (Wilmington, Del.) will purchase the 1,800 acres north of Lewes, Del., that it optioned a week earlier (*CW Business Newsletter, Sept. 27*). Although no immediate plans for building have been disclosed, the tract will likely figure in future expansion.

•

Dyestuffs: Belle Chemical Co. (Reading, Pa.) will transfer its entire operations to Chester, S. C. The firm will build a plant in the Southern city next year to place it closer to its major synthetic fiber-textile markets. Completion of the plant will double Belle's capacity.

FOREIGN

Power/Russia: The U.S.S.R. plans to exploit an unusual source of power at Mezensky Bay on the White Sea. Three tidal power stations will be built in the area, which lacks fuels for conventional electric power generation.

•

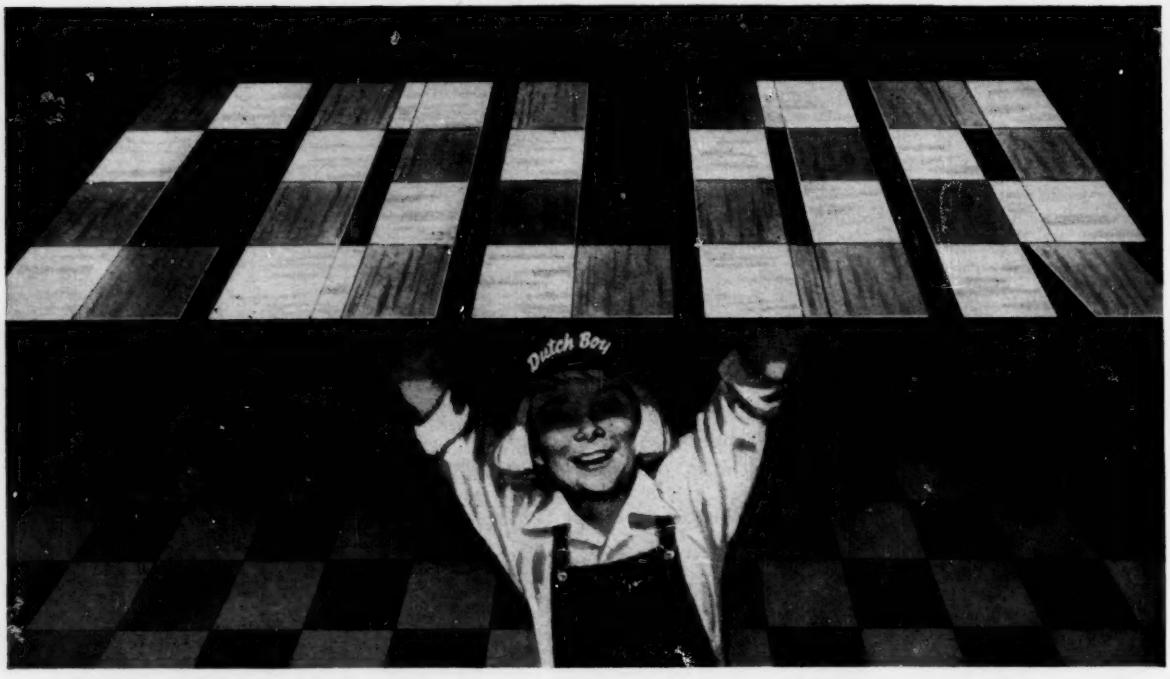
Epoxies/Germany: BASF and Deutsche Shell AG. continue Germany's expansion into previously imported chemicals. A 2,000-tons/year Epikote plant has just gone onstream in Wesseling near Cologne, operated by Rheinische Olefinwerke GmbH., a subsidiary of the two companies.

•

Reinforced Plastics/Mexico: Vitros Fibres S.A. (Mexico City) has received two loans worth $400,000 from the U.S. Export-Import Bank and Girard Trust Exchange (Philadelphia). The money will be used to expand plant capacity and to purchase equipment for manufacturing continuous filament glass fiber for plastics reinforcement. Owens-Corning Fiberglas Corp. (Toledo, O.) owns 40% of Vitros' common stock.

•

Resins/Hong Kong: Reichhold Chemicals (Hong Kong) Ltd., an affiliate of Reichhold Chemicals, Inc. (White Plains, N.Y.), will produce the U.S. company's complete line of synthetic resins upon completion of facilities in the spring of '59 in Hong Kong. Resins will go to paint, paper, ink and polyester industries.



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Newsletter

CHEMICAL WEEK
October 4, 1958

Diplomatic considerations threaten Project Plowshare, Atomic Energy Commission's year-old program to develop industrial uses for underground explosions of atomic devices. The experts believe the bomb's tremendous energy can be harnessed to break up mineral formations, make trapped oil flow, produce steam for electric power generation, and mass-produce radioactive isotopes—all more cheaply than under present methods. AEC has scheduled an experimental shot in New Mexico next summer to explore the latter two applications.

Dow and Monsanto are among firms seriously interested. So are several oil companies that think nuclear explosions can be used to retort oil shale in place at prices competitive with petroleum. Government and industry experts have been comparing notes, and their talks had been expected to lead to more tests.

But the Russians say they fear Project Plowshare is a phony, which can be used to cover up continued A-bomb testing. They want to ban all tests, "peaceful" or not. President Eisenhower and AEC want to exempt Plowshare from any testing ban. The issue comes to a head Oct. 31, when East-West negotiators meet in Geneva in quest of an agreement to stop bomb tests. So AEC is stalling work on Plowshare until the air is cleared. And there's a possibility that U.S. negotiators will sacrifice Plowshare if it will help win a larger victory in the talks with the Soviets.

AEC Commissioner Willard Libby says abandonment of the project would be tragic. The most vocal Plowshare champion (there's some doubt in other quarters that the whole idea is feasible), Libby says it would be hard ever again to create the enthusiasm for the project that exists now in industry.

•

Lead and zinc producing countries may yet get an international agreement on production and export quotas, despite the Administration's imposition of quotas limiting imports into this country. U.S. officials will keep pushing for it.

The new quotas, limiting such imports to 80% of what producing countries have sold here over a five-year period, were adopted under intense pressure from politicos here at home. Those representing the lead-zinc areas were successful in winning the Administration order when it became clear that Canada—an important producing country—would drag its heels on any agreement among producers to cut up world markets via an international agreement.

The import quotas going into effect Oct. 1 are designed to pressure Canada into negotiating an arrangement among exporting nations.

•

Industry sources are perusing two new reports on beryllium, one of the hottest new metals in the missiles business.

"Beryllium for Structural Applications" has been published by Defense Metals Information Center at Battelle Memorial Institute. It's a comprehensive review of the "unclassified literature" on the subject and is available from Office of Technical Services, Dept. of Commerce, Washington 25, D.C.

This report notes the following contracts for studies on beryllium: two with Brush Beryllium Co., one for $230,000 for sheet-rolling the metal and another for $90,000 for alloy development; a $79,000 contract with Alloyd Research Corp. for ductility studies, and one for $70,000 with Martin Aircraft on fabrication.

The Defense Dept.'s Materials Advisory Board has published a report on its panel on beryllium—an evaluation of beryllium's availability and applicability.

The board says that to increase beryllium's use substantially, the federal government should guarantee world producers a fixed price for a 10-year period. The board says that $60/ton/unit of oxide is what is needed if consumption of contained beryllium is to reach, say, 800 short tons/year. The board recommends a stockpile program.

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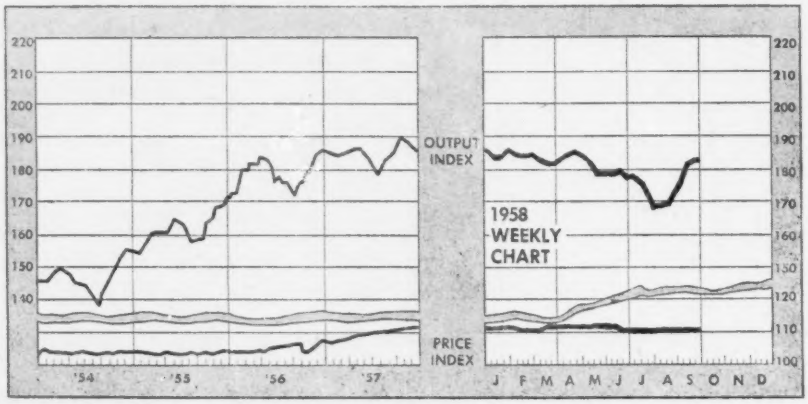
Some 600 U.S. technical papers on nuclear energy, presented at the UN Geneva Atoms-for-Peace Conference, are available from Office of Technical Services. The list costs 25¢; individual papers cost 50¢.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	186.0	184.0	187.5
Chemical Week wholesale price index (1947=100)	110.6	110.6	111.0
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	45.47	45.47	40.75

MONTHLY Wholesale Prices (Index 1947-1949 = 100)	Latest Month	Preceding Month	Year Ago
All commodities (other than farm and foods)	126.1	125.6	126.0
Chemicals and allied products	110.0	110.4	109.5
Industrial chemicals	122.8	123.1	123.5

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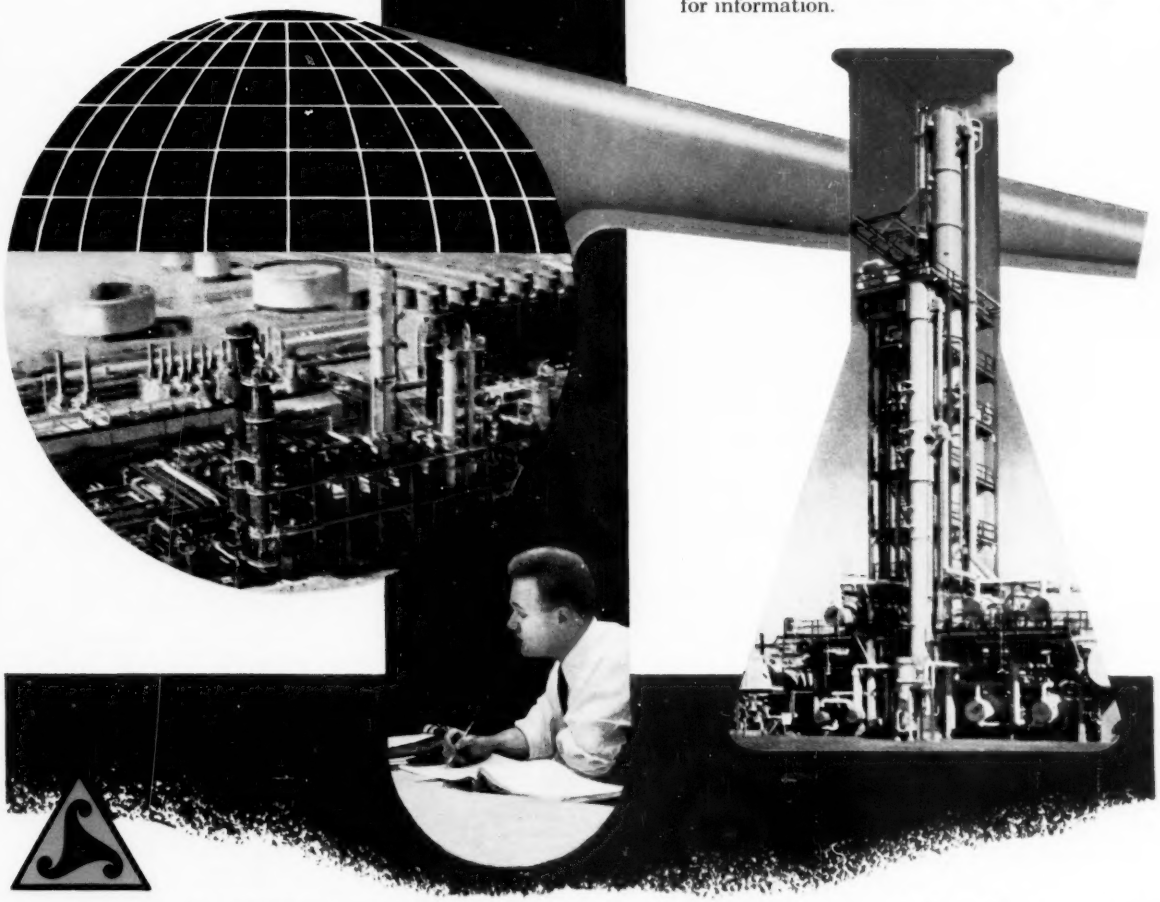

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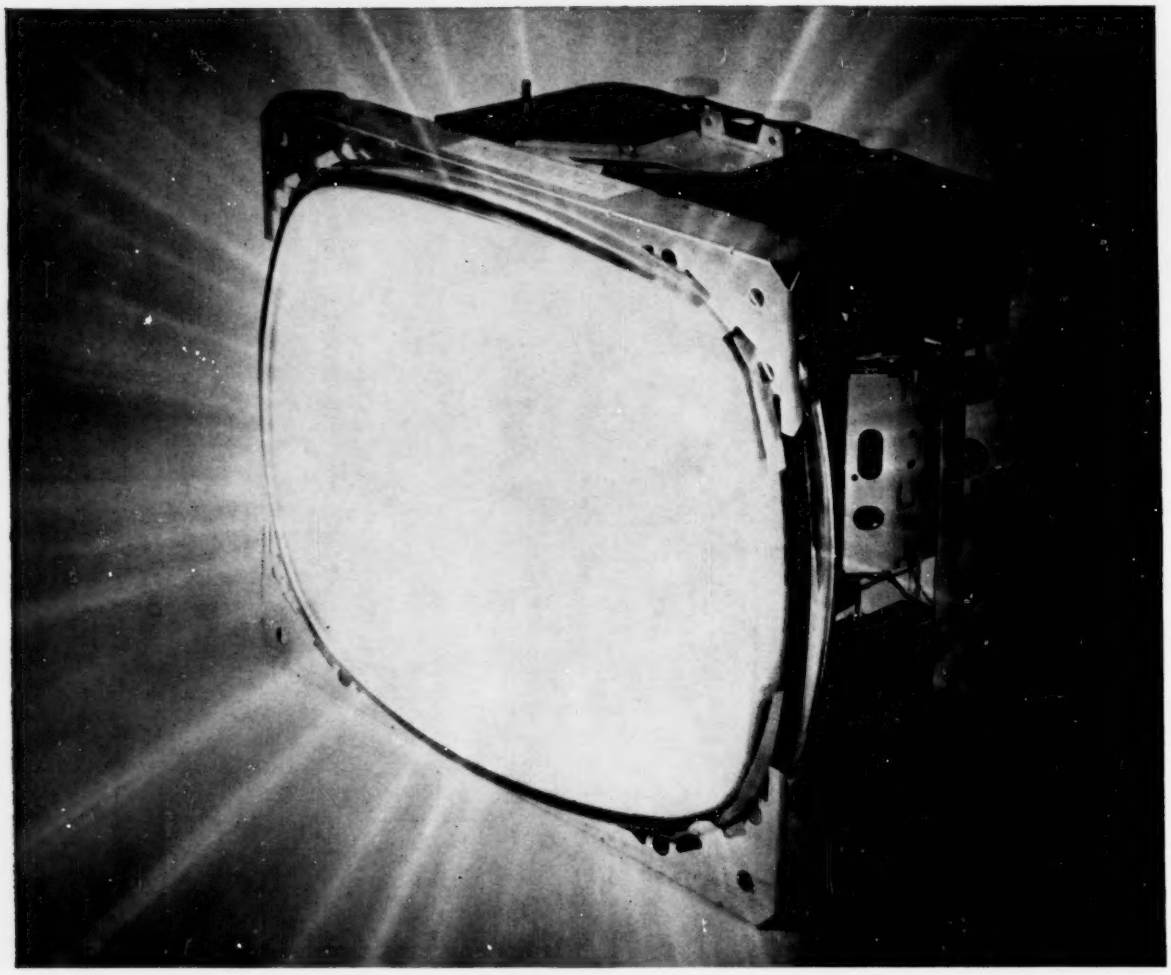

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As Flux Lithium fluoride has been used as a flux in the preparation of magnesium boroarsenate phosphors which are said to be useful for cathode ray tubes, and fluorescent lamps.

As Coactivator Lithium ions aid in the activation of magnesium oxide by chromium ions. Red cathodoluminescent phosphors are thereby obtained.

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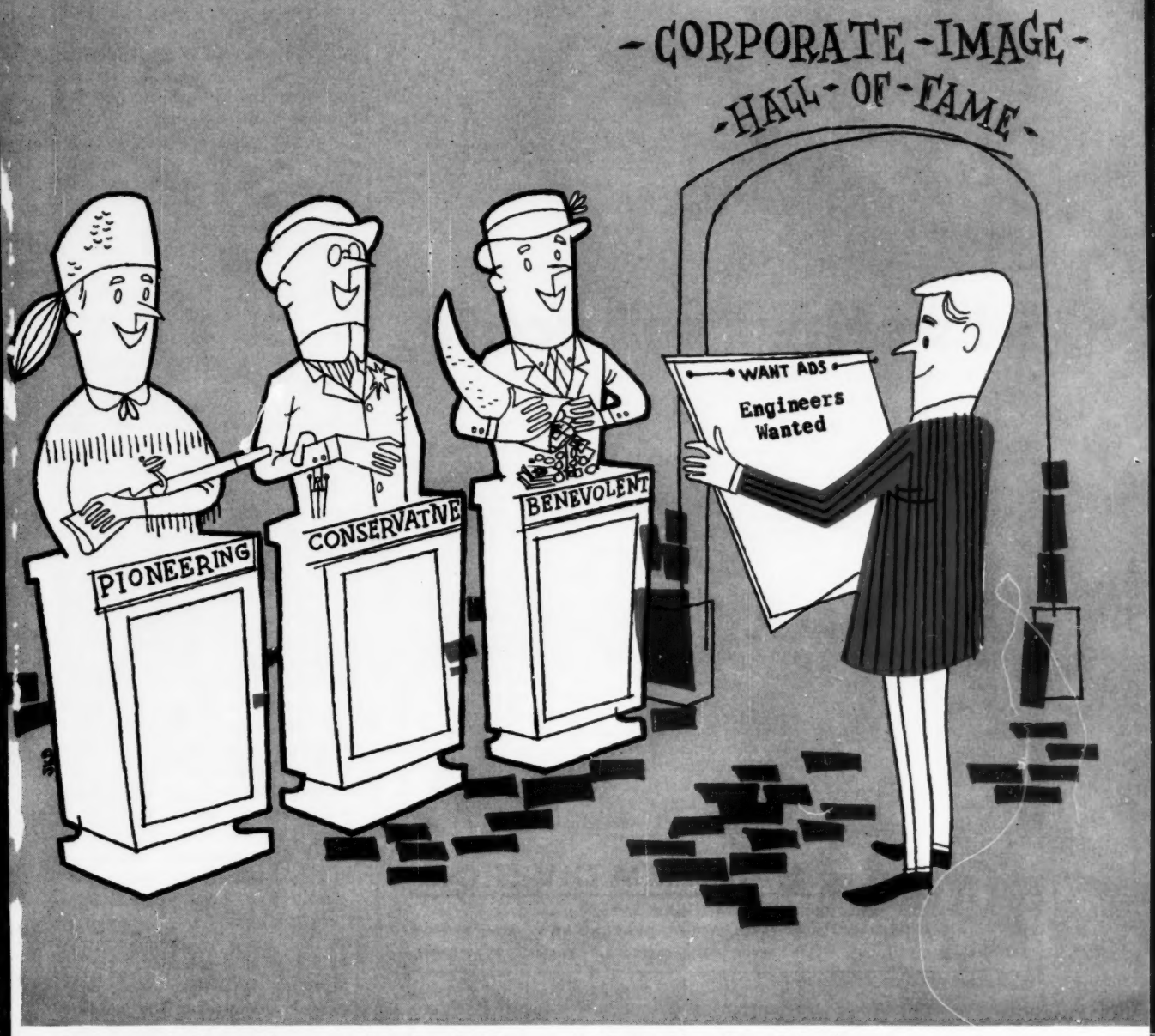

A company's 'image' in an engineer's mind figures in his consideration of the firm as an employer.

Company Image Colors Recruiting Picture

There's a new aid this week for executives of chemical process industries seeking better technical manpower—a survey pointing up the importance of learning the image a company has formed in the minds of practicing technicians.

The job of determining your company's image can be done, says Deutsch & Shea, New York technical manpower consultants, in much the same way companies test consumer and prospect attitudes toward their products — by a survey. And, just as some companies have reputations for high-quality products, some have reputations among engineers as top employers.

This is borne out by a Deutsch & Shea survey of 1,500 engineers showing that company reputation and prestige ranks fifth in 24 job-acceptance factors — above such factors as working conditions, security, retirement provisions and benefits.

Building an Image: The survey showed that technical personnel had

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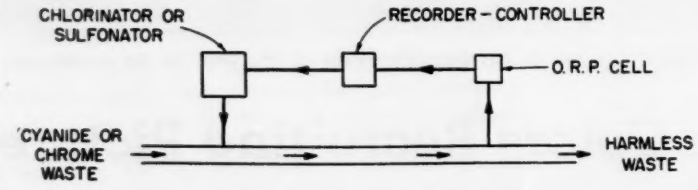

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contacts with just a few of the companies about which they hold opinions. Apparently, rumors about employee practices and administration, reports from colleagues, advertising and promotion all help shape their opinions about companies.

To put the company image in its proper perspective as a technical recruiting factor, Deutsch & Shea had a twofold job: find what things go into a "favorable" image; find the easiest ways to produce such an image.

The consulting firm decided to "depth interview" 50 engineers representing 44 companies in metropolitan New York. The engineers all were over 20 years of age; 45% were between 30 and 40 years old.

Typical Survey Approach: Each engineer was interviewed for 1½ hours, was shown 12 cards, each containing the name of a well-known engineering firm selected at random. Although the list did not contain a chemical company, the survey results are, of course, applicable to the chemical process industries, the consulting firm reports.

Each engineer was asked general questions, then more specific questions about each company. His replies were carefully noted and later compared with remarks from the other engineers participating in the survey. From the engineers' remarks, researchers were able to form a composite image of each of the 12 companies. They used these basic image factors: first impression, quality of engineers employed, the company as a place to work, what it expects from its engineers, kind of impression it tries to convey to engineers, its potential as an employer.

Significant Findings: The survey, admittedly a pilot study and intended only to determine what part, if any, the company image plays in recruiting, revealed some rather significant findings, Deutsch & Shea says. For example:

- The image formed in the minds of engineers is virtually independent of the company's salary policies and location.
- Engineers prefer to work for firms about which they have substantial information.
- Large companies are regarded with ambivalence: they gain more favorable than unfavorable attitudes,

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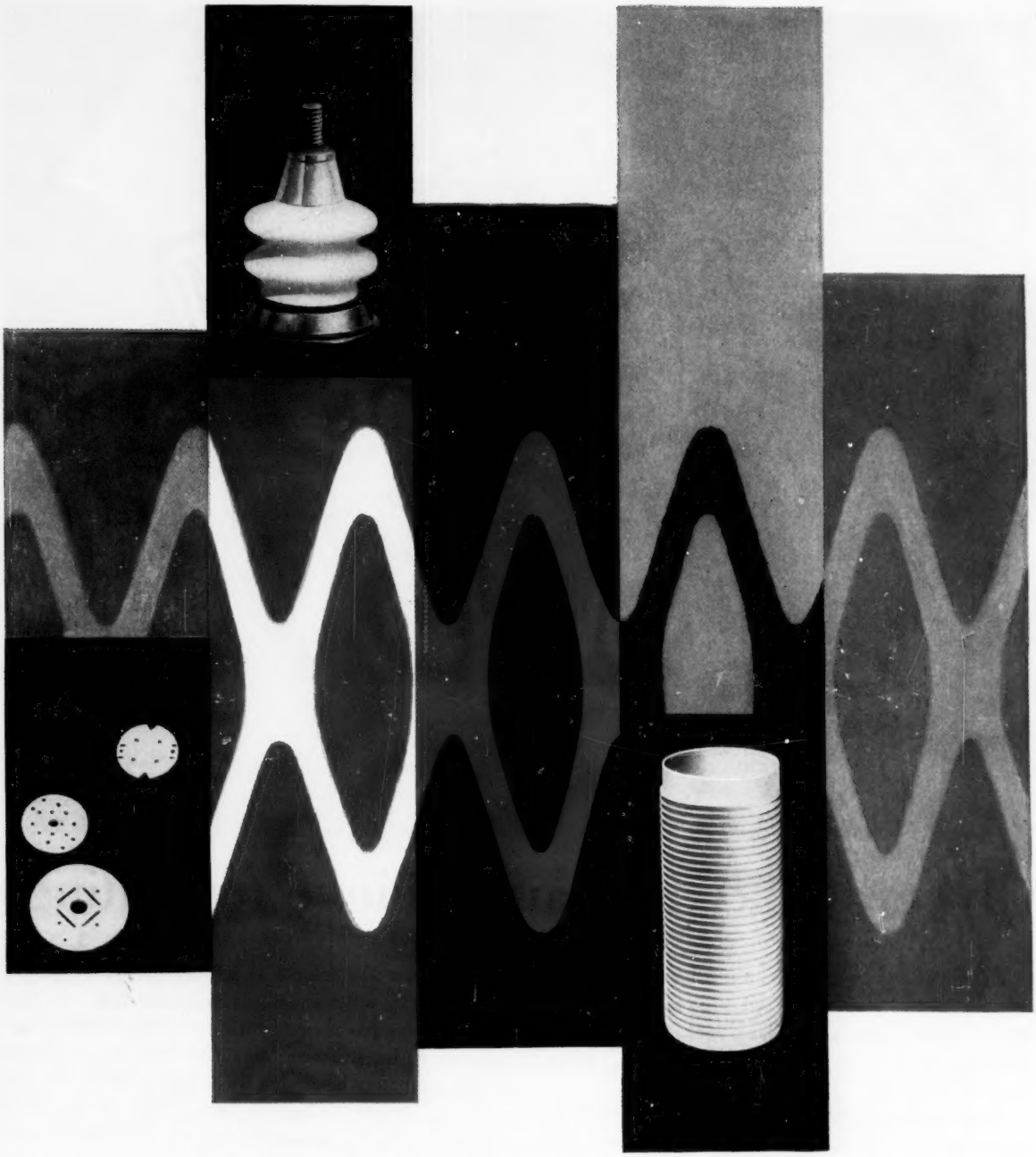

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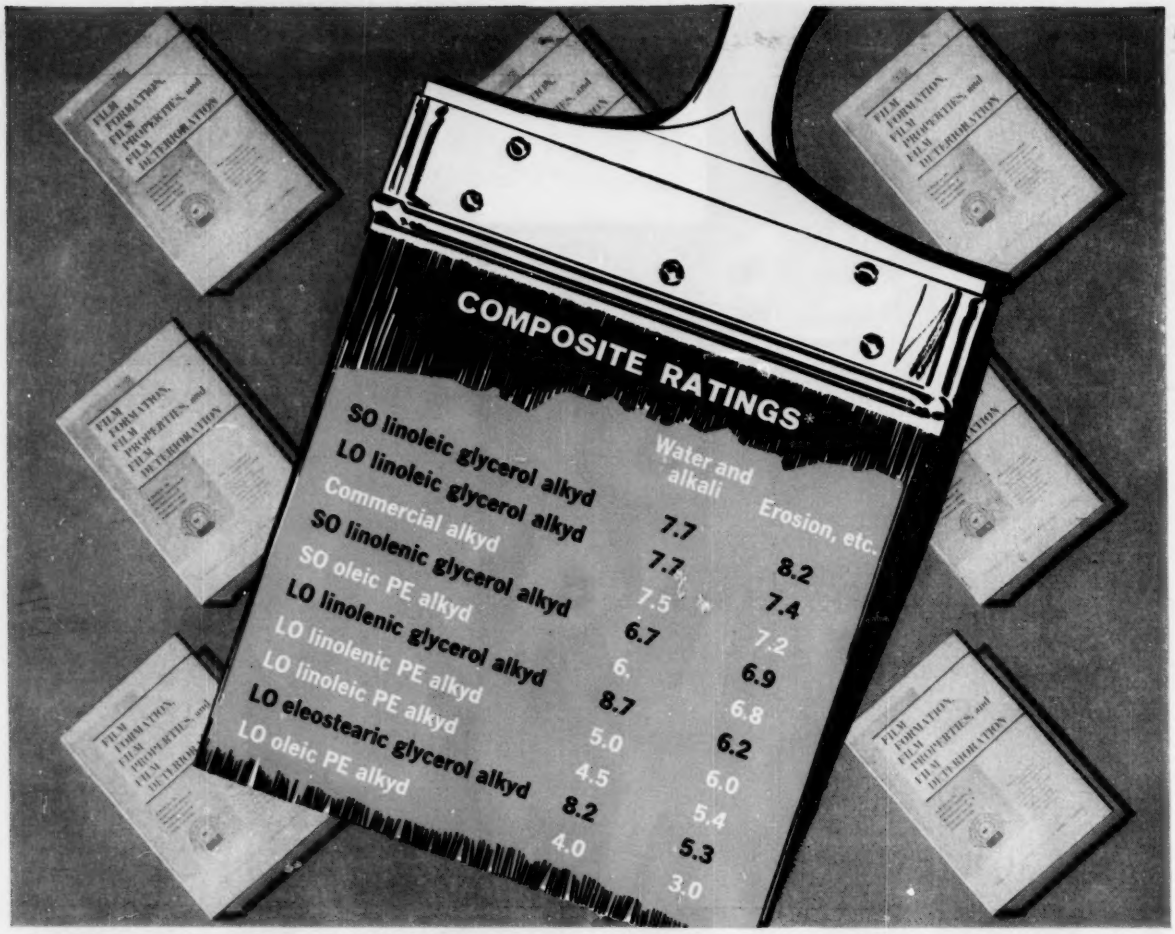

COMPOSITE RATINGS*
Water and alkali
Erosion, etc.
SO linoleic glycerol alkyd 7.7 8.2
LO linoleic glycerol alkyd 7.7 7.4
Commercial alkyd 7.5 7.2
SO linolenic glycerol alkyd 6.7 6.9
SO oleic PE alkyd 6. 6.8
LO linolenic glycerol alkyd 8.7 6.2
LO linolenic PE alkyd 5.0 6.0
LO linoleic PE alkyd 4.5 5.4
LO eleostearic glycerol alkyd 8.2 5.3
LO oleic PE alkyd 4.0 3.0

Glycerol alkyds again achieve top ratings

The composite ratings above are fresh evidence of the importance of Glycerine in alkyd resins for paints. They appear in the recently published book, "Film Formation, Film Properties, and Film Deterioration." Judge them for yourself:

Values in the column at right are a composite of figures assigned to gloss, appearance (chalking and failure), loss in weight, hardness and abrasion resistance.

Values in the column at left are combined quality ratings from water and alkali immersion tests.

Glycerine has manufacturing as well as filming advantages. Its structure simplifies cooking. Its liquid state simplifies handling. We'd like to send you our 20-page booklet: "Glycerine Terms, Tests and Technical Data." Address your request to the Glycerine Producers' Association.

*From page 394, *Film Formation, Film Properties, and Film Deterioration*, A Study by the Research Committee of the Federation of Paint and Varnish Production Clubs.

Properties

HYGROSCOPICITY • STABILITY

SOLVENT POWER • VISCOSITY

NONVOLATILITY • NONTOXICITY

TASTE • COMBINING WEIGHT

ADVANTAGES THAT COME WITH . . .

Glycerine

Applications

HUMECTANT • CARRIER

SOLVENT • LUBRICANT

SOFTENER • EMOLLIENT

ANTI-FREEZE • ALKYD BASE

GLYCERINE PRODUCERS' ASSOCIATION • 295 MADISON AVENUE, NEW YORK 17, N. Y.

but engineers fear they will stifle individual creativity.

- Engineers are clannish and self-protective as a group: they seldom criticize a company's scientists, although they criticize the company.
- Development and growth potential — good or bad — are among the most significant aspects of the image.
- The criteria by which one company was judged were, for the most part, used on all.

From its survey, D&S concluded that the company image is an important factor in recruiting. A good image has dollars-and-cents value: it attracts better men, lowers resistance to recruiting appeals.

Both for purposes of recruiting and for improving the morale of technical people already on the payroll, process companies stand to benefit from a detailed analysis of their own images. Moreover, even a simple image "rating," compared with that of other firms, can tell a company when it will likely be facing a manpower problem.

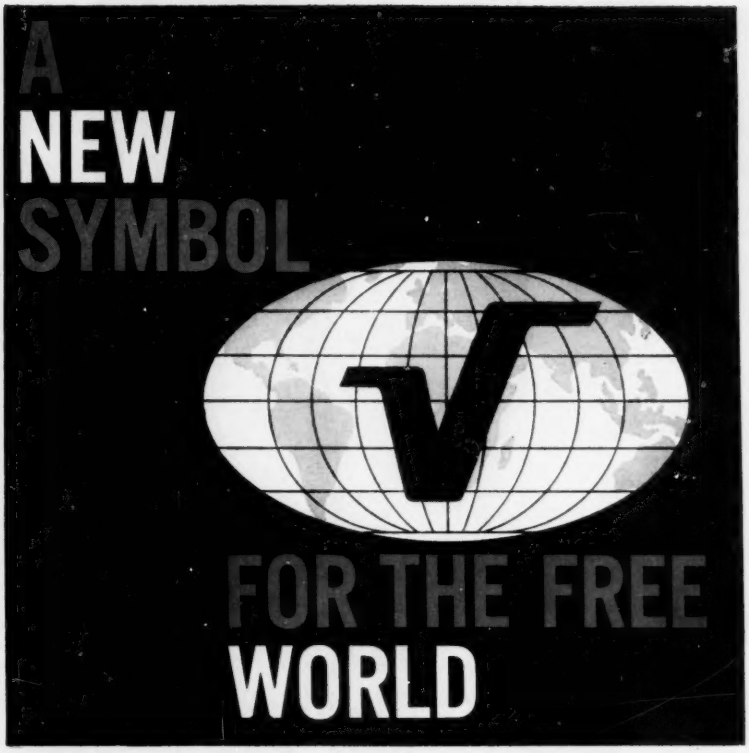
Firms Urged to Politick

The U. S. Chamber of Commerce last week challenged industry to get into politics. The call came soon after a statement by a chemical process company that it would increase its activities in politics in opposition to organized labor's "mounting political power."

The chamber's weekly newsletter, "Washington Report," urges businessmen to "get to work at the precinct and ward levels, where political decisions are made and officeholders chosen." The statement, over the name of William A. McDonell, chamber president, says that business must set its sights on candidates rather than persons "already elected and already committed to a political philosophy hostile to business."

The chamber also urged businessmen to promote interest in politics, candidates and issues among employees to "help establish a more favorable attitude toward business in the next Congress."

The chamber's pronouncement paralleled proposals made by Gulf Oil Corp. a few days before, declaring its "determination to take an increasingly active interest in practical politics," especially in areas where it



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- **Minerals exploration, mining and processing, particularly uranium and thorium.**
- **Reprocessing of nuclear fuels.**
- **Chemical, physical, and electronics research and development.**
- **Complex electronic and electromechanical systems.**
- **Resource development, including geophysical research, extractive metallurgy, process engineering, economic analyses.**

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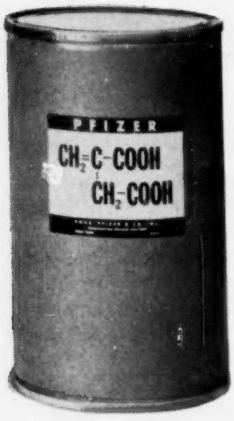
- Nuclear and process engineering, design
- Electronics development and production
- Refinery engineering, design, construction
- Uranium mining, milling, and processing
- Thorium, rare earths, and heavy minerals
- Recovery of rare metals and fine chemicals
- Aircraft components and ordnance systems
- Ceramic colors, pigments, and chemicals



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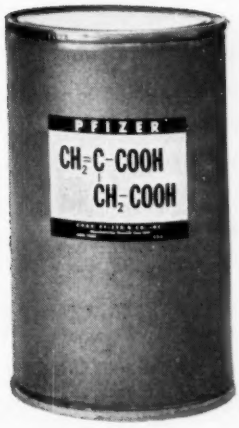
Itaconic Acid is now used commercially in unsaturated polyesters, oil modified alkyd resins and vinyl and acrylic copolymers. These are widely accepted as coatings for paper, metal, leather and regenerated cellulose where *adhesion* and *reactivity* are the key properties. Improved dye receptivity is also obtained with Itaconic Acid in acrylic type synthetic fibers.

Build adjacent carboxyl groups into your



ACID TECHNICAL

addition resins. Take advantage of the adhesive properties, dye receptivity and reactivity of these carboxyl groups. In your polyester resins take advantage of the greater reactivity of the double bond in Itaconic Acid.

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ADMINISTRATION

can oppose "labor's mounting political power."

Gulf's statement was in a letter to employees and shareholders published in its house organ, "The Orange Disc," signed by Archie D. Gray, senior vice-president responsible for legal counsel and employee and public relations.

Gray believes the new program will not be brought to maximum usefulness in time for the '58 elections. But Gulf will encourage its shareholders, employees and dealers (the company estimates these groups total more than 161,000 persons) to take more active interest in politics where they live.

Gulf will keep a continuous study of the records of elected officials—initially confining this scrutiny to members of the Senate and House of Representatives — to provide reports for stockholders, employees and dealers to help them determine if their representatives are serving them well.

Gray states that "the years are over when Gulf, as well as most other U. S. corporations, can afford to become so busily engaged in business activities that politics is ignored.

"The fact that organized labor has been following a similar line of action is the reason why labor leaders have achieved dominance over our national legislative assembly."

A number of companies have signified their endorsement of Gulf's stand.

LEGAL

Employment Agreement Suit: A former German chemical patent agent, now working in the foreign patents section of Du Pont's legal department, has asked the Delaware court of chancery to award him $9,000 damages plus interest from a German corporation. The employee, Werner Buechner, claims that prior to coming to the U.S., he signed an employer-employee agreement with Farbenfabriken Bayer AG. (Leverkusen), which he now says has restricted his field of employment.

Through his attorney, Buechner says the agreement, which he claims was negotiable only in German courts, forced him to take a position in the U.S. below his skill and earning potential.

To compel the court appearance of Bayer representatives, Buechner

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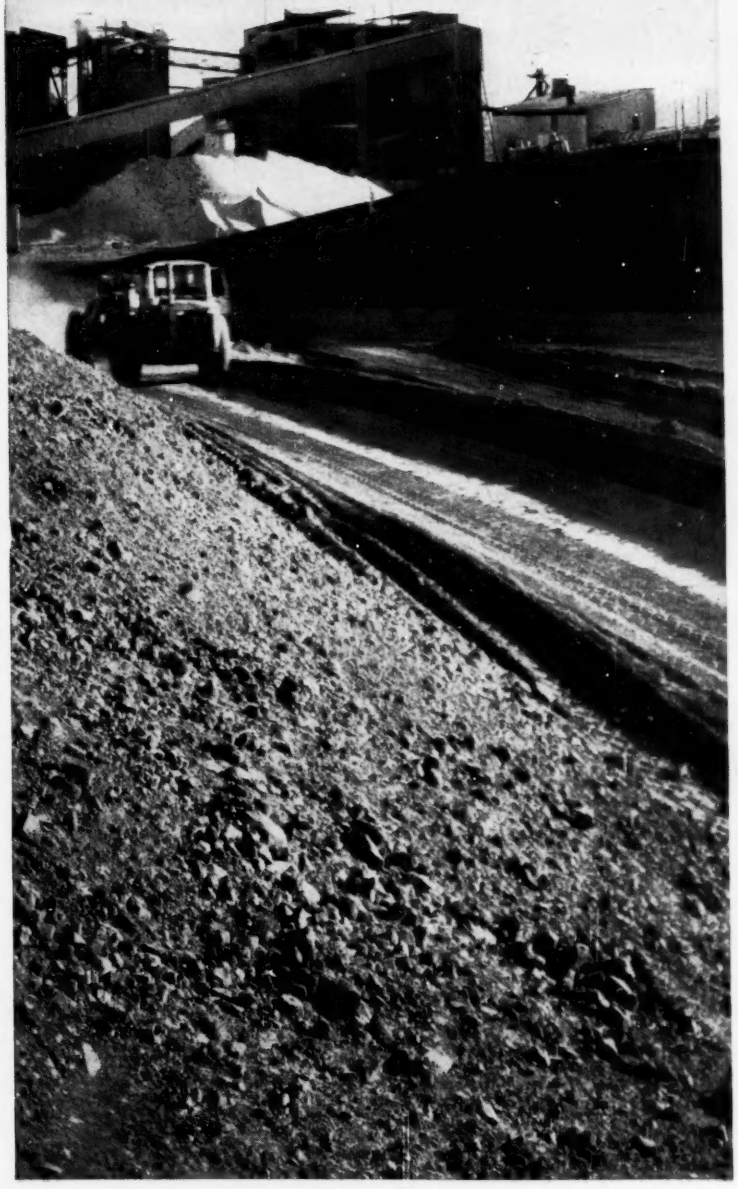

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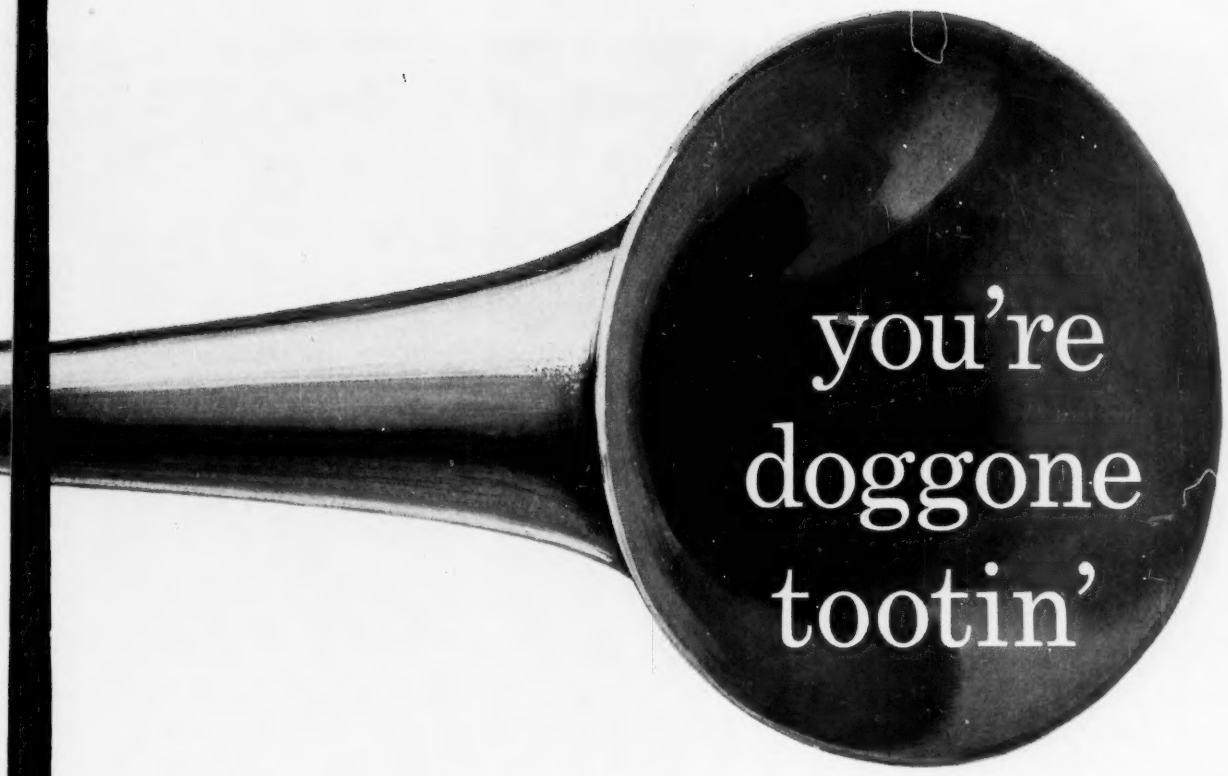

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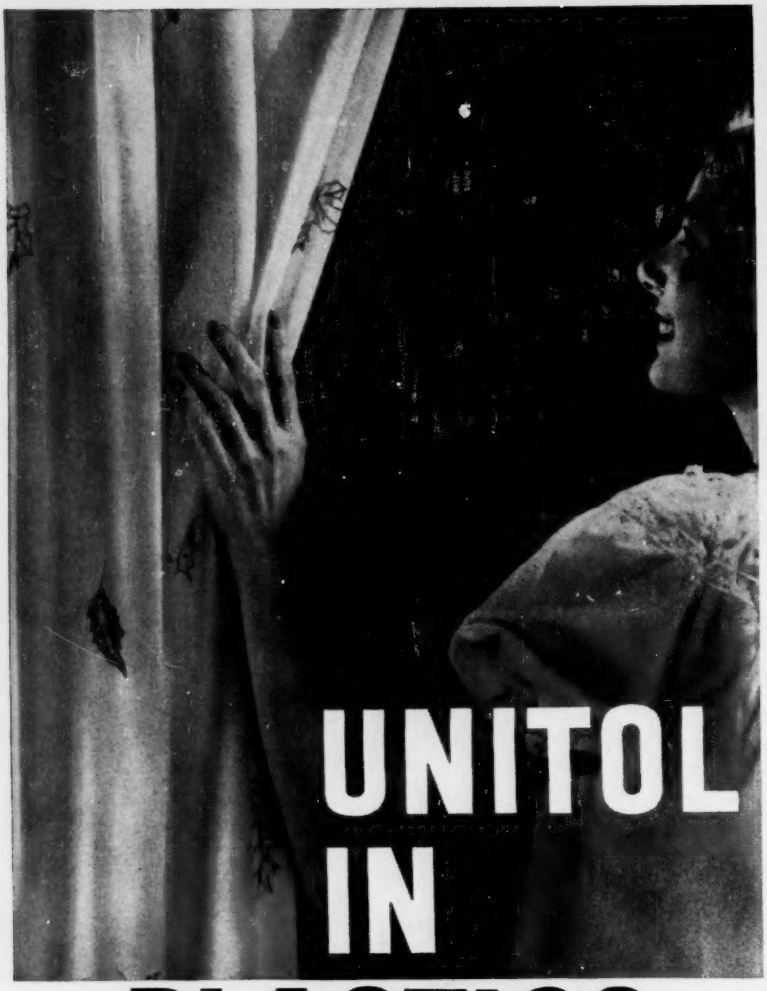

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ADMINISTRATION

has requested the court to impound stock of Mobay Chemical Corp., jointly owned by Bayer and Monsanto Chemical Co. Buechner hopes to obtain damages from Bayer's assets in this country.

LABOR

Deadlock: A strike of production employees at Canadian Industries Ltd.'s Edmonton, Alta., polyethylene plant continued into its second week after the union, Local 16-666, Oil, Chemical & Atomic Workers International, continued to insist on demands in excess of recommendations made by a conciliation board.

Plant Manager S. T. Jones says the union has not offered to engage in further discussions. The strike started in early September after top pay rates were raised by the company to $2.61 from $2.56/hour and the labor rate from $1.59 to $1.64. The union felt the increase was not high enough. The conciliation board had recommended 2% increases (amounting to 3-5¢/hour). The union seeks increases of from 13-20¢/hour, plus increases in shift premiums. The old contract expired last April 25.

KEY CHANGES

Frank Ross to vice-president—sales, and **Charles R. Schmitt** to assistant to the vice-president—sales, E. F. Houghton & Co. (Philadelphia).

Victor T. Johnson to vice-president and director of marketing, Bristol Laboratories, pharmaceutical subsidiary of Bristol-Myers Co.

Harry B. Warner to vice-president, marketing, B. F. Goodrich Chemical Co., division of B. F. Goodrich Co.

George M. Seib to vice-president, and **Erwin H. Steif** to secretary, Oakite Products (New York).

George W. Low, Jr., to manufacturing manager, Film Division, American Viscose Corp. (Philadelphia).

Charles W. Guy to executive vice-president and director, General Gas Corp. (Baton Rouge, La.).

C. L. Randolph to associate director of chemical research, U.S. Borax Research Corp. (Anaheim, Calif.), wholly owned subsidiary of United States Borax & Chemical Corp.

How does a growth company go about picking a new supplier?

Rexford S. Blazer, chairman of the board, Ashland Oil & Refining Company, Ashland, Kentucky.

"TAKING ON a new supplier at Ashland Oil is a very important decision," states Rexford Blazer, chairman of the board. "We were not only interested in immediate needs. We had to know our own long-range requirements. This pretty well dictated the size of suppliers. Then, we wanted to know how well equipped our suppliers would be to cope with the challenges that inevitably have to be met in continuing the growth factor in our business. What was their reputation for service? How about research? Were they development-minded? We investigated these very carefully in connection with Wyandotte, to the complete satisfaction of members of our team."

"FIRST, we established our requirements for our new brand Valvoline antifreeze," says Everett F. Wells, president. "For several years, we have felt that we should have a brand of antifreeze of our own to go with our famous Valvoline motor oil. Valvoline was the first motor oil in America. Valvoline has always been a top name brand. This dictated the highest quality ingredients for Valvoline antifreeze, and called for a careful

Everett F. Wells, president, Ashland Oil & Refining Company.

study on our part of all suppliers before selecting our sources. Our investigation proved that Wyandotte's glycol more than met these requirements. Others at Ashland carried on from here."

C. J. Farcasin, representative of Wyandotte Chemicals Corporation.

"WHEN I first learned that there was to be a Valvoline antifreeze, I knew it was a good prospect for Wyandotte quality," states C. J. (Jack) Farcasin, Wyandotte representative. "My main concern was: could I meet the challenges of a growth company introducing a new brand? Believe me, it was a team job—meetings with Ashland executives . . . contacts with our chemists and theirs . . . chemical data . . . tests . . . samples . . . days at our plant . . . complete handling and shipping data . . . then the long, anxious wait that shortens salesmen's lives. It was worth it, though. We're mighty proud to say that our ethylene glycol is being used in high-quality Valvoline antifreeze."

* * * *

Suggestion: Call in a Wyandotte representative and discuss your requirements with him. For the scope of our products, see listings below. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

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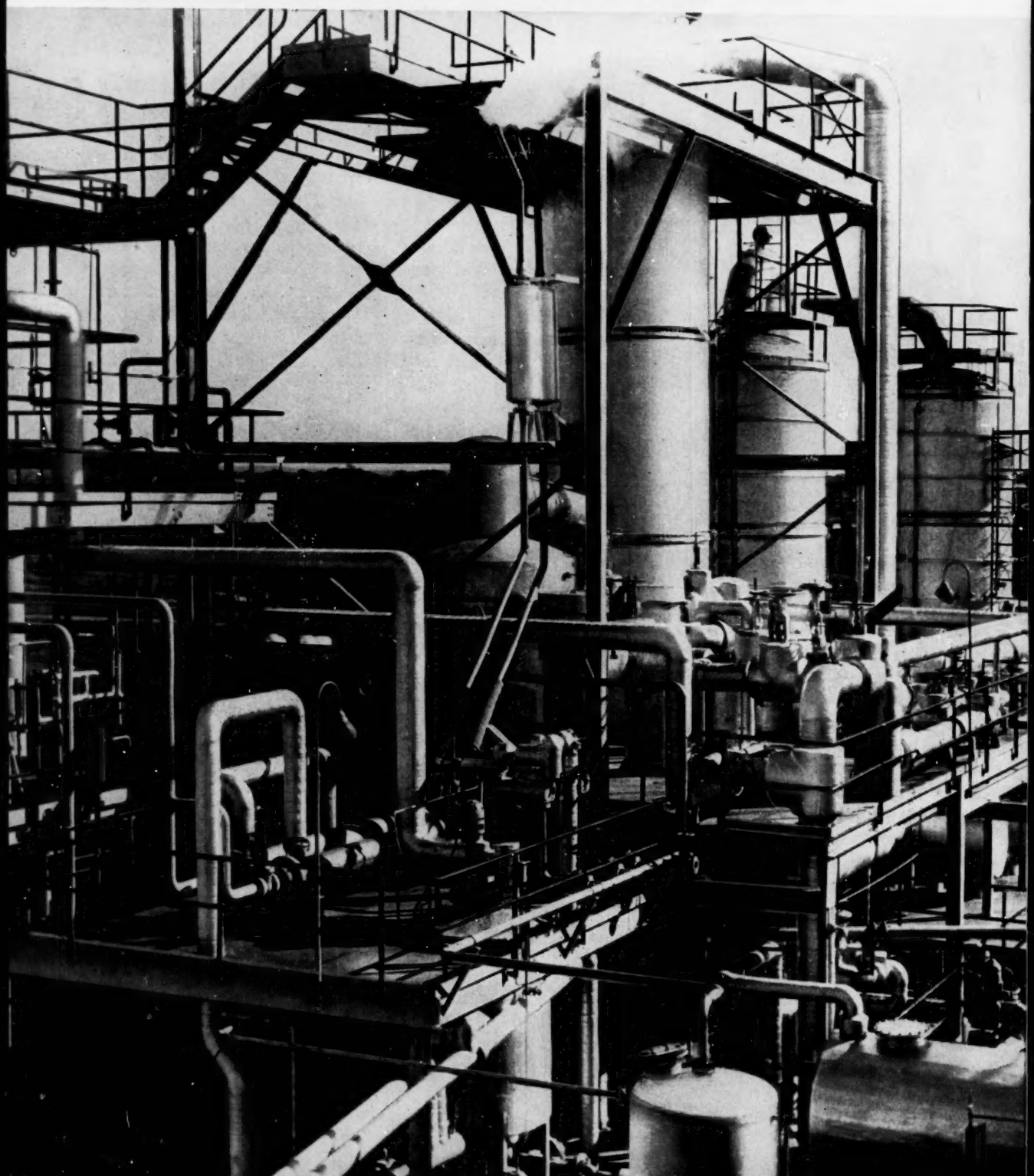
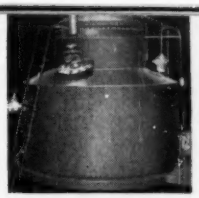


process *you* have developed...



Fatty acid esterification . . .

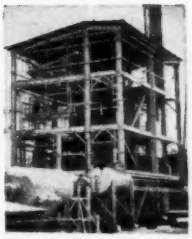
it's a job for Vulcan-Cincinnati

Each of the plants shown here started with a process developed by the customer. And in each case Vulcan-Cincinnati successfully engineered the process into a profitable, full-scale commercial plant.

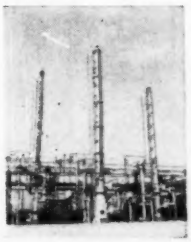
The variety of processes employed in these plants indicates the wide range of engineering and construction skills which Vulcan-Cincinnati can put to work for you.

When your needs call for minimized plant investment, maximum product quality and low cost per ton of capacity, rely on the experience that has proved itself in hundreds of successful installations.

If your new project involves a process *you* have developed, it's a job for Vulcan-Cincinnati.



Wood rosin extraction and purification . . .



Trichlorethylene distillation . . .

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VUL-608

Putting on finishing touches

Amoco Chemicals' aromatic acids plant on stream soon

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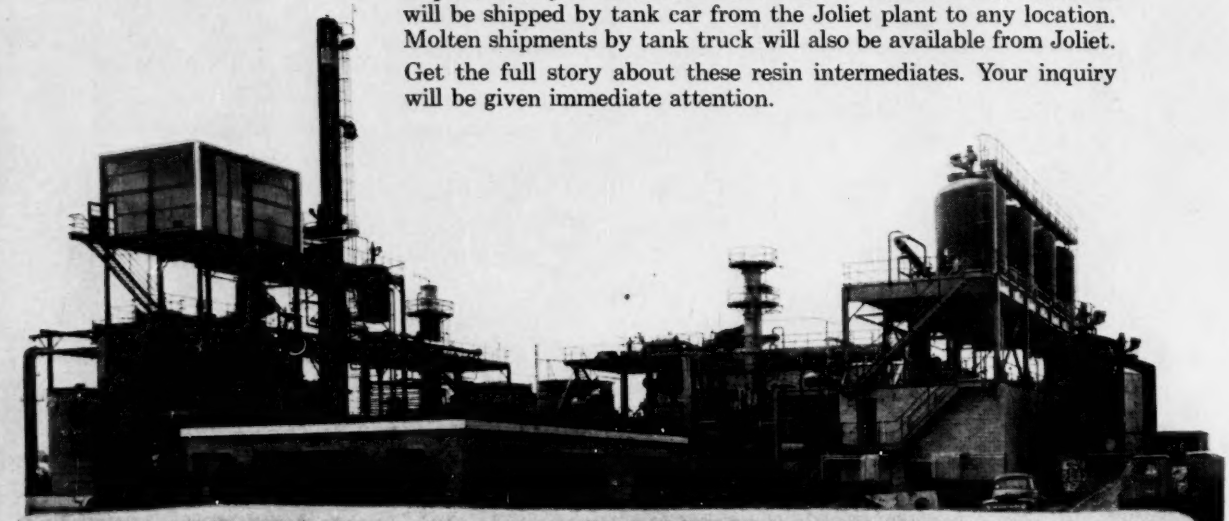
Paint, plasticizer and polyester resin manufacturers will now have a new resource for raw materials. They can assure themselves continuity of service on aromatic acids by having as a supplier one that uses a completely different starting material—xylenes.

Amoco's unique one-stage oxidation process assures finished products of high purity, quality and heat stability.

Technical service by experienced resin chemists from Amoco's modern laboratory will be available to customers to help them evaluate these new acids and to help in the solution of surface-coating manufacturing problems.

Amoco Chemicals will warehouse bagged materials in Detroit, Cleveland, Newark, Chicago and other principal cities. Mixed shipments may be ordered in either LCL or carlots. Molten material will be shipped by tank car from the Joliet plant to any location. Molten shipments by tank truck will also be available from Joliet.

Get the full story about these resin intermediates. Your inquiry will be given immediate attention.



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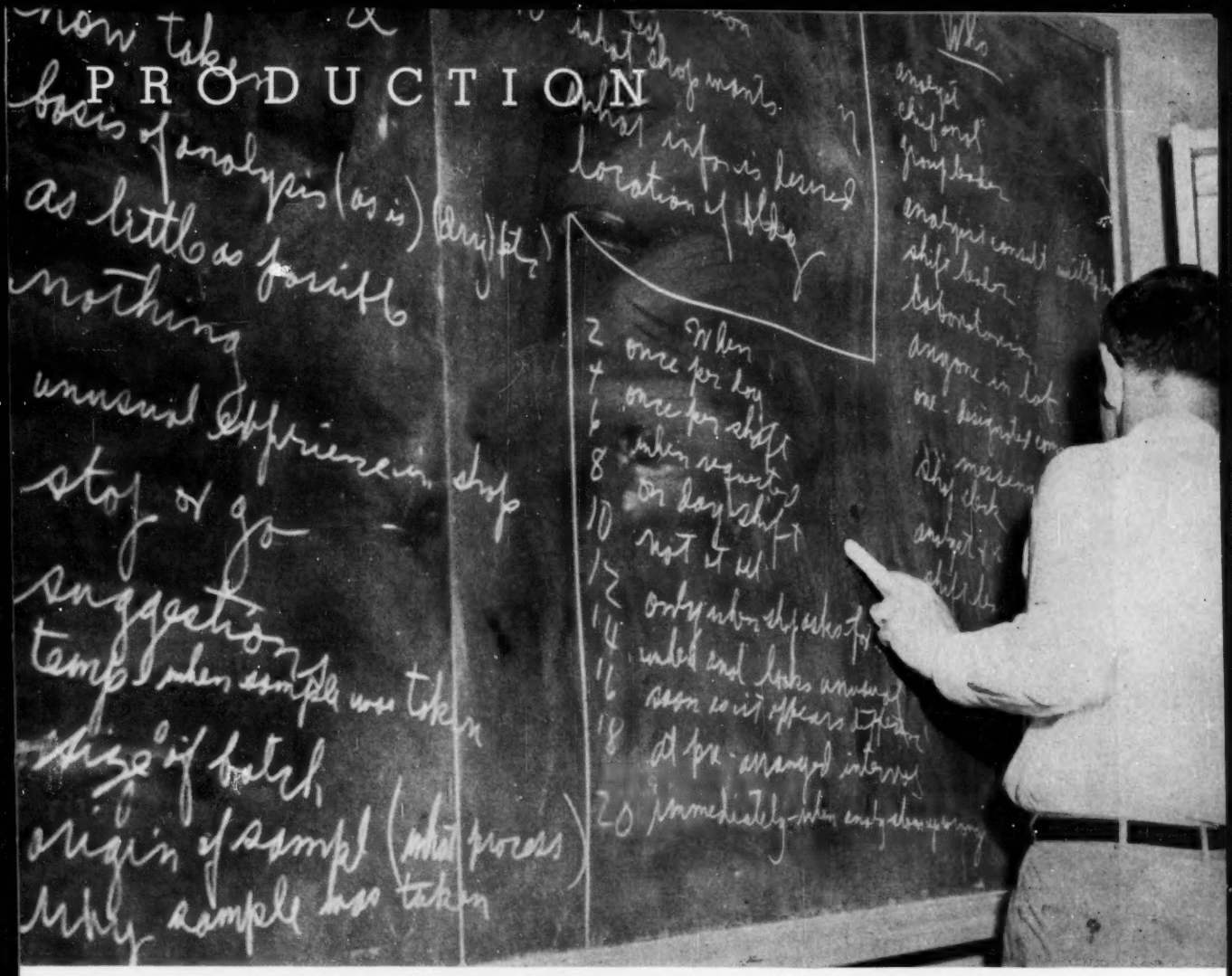


Cyanamid's Finsterbach covers blackboard with ideas 'brainstormed' by plant chemists, supervisors.

Chalking Up Savings in the Control Lab

From the 274 ideas chalked up on a blackboard (above), American Cyanamid Co.'s plant management at Bound Brook, N.J., this week is preparing to put into practice six recommendations that could save it more than 16,000 man-hours per year in simplifying the recording and reporting of control laboratory results.

Yet, developing the recommendations cost less than 1% of the potential savings—114 man-hours. Added gain: they stem directly from ideas of the users—control laboratory chemists, production supervisors.

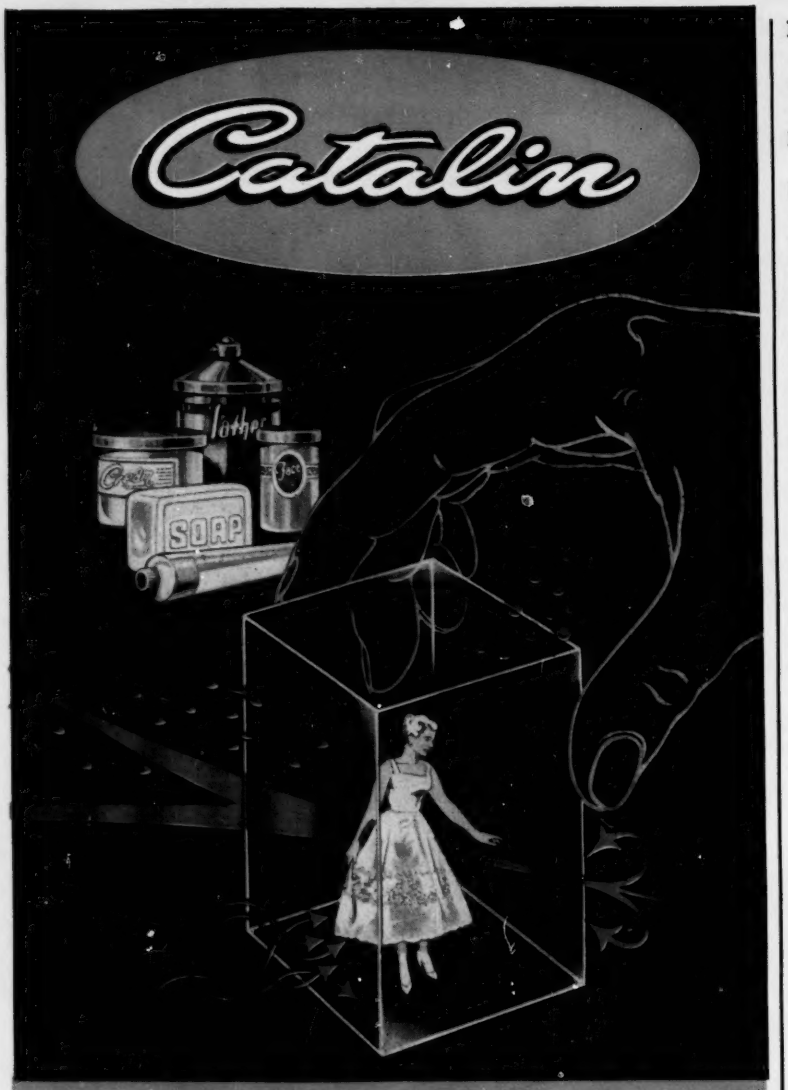
And for other chemical companies needing to simplify complex plant procedure, Cyanamid's results show that the often-overused, misused and recently maligned technique of "brainstorming" shouldn't be overlooked as a simplification tool.

A Million Tests: As at many plants, the methods of recording and reporting individual control lab tests at the Bound Brook plant served a definite purpose at the time they were installed. But as the plant grew, so did the number of control tests and variations in reporting methods. Cyanamid estimates that close to a million tests are now run each year and that recording and reporting methods are just "too many."

Brainstorming, of course, wasn't the only technique that could have been used to sift control lab procedures, come up with simplifications. But it had the advantages of bringing together all the individuals involved in recording, reporting and using the control test results, getting them to contribute ideas without the inhibitions and tensions of a formal conference.

At first, Fred Finsterbach, who was called on to lead the brainstorming session, had some qualms about its use. He had taken part in several brainstorming sessions before joining Cyanamid's training staff, wasn't certain the technique was suited to helping solve the lab procedure problem. "Brainstorming seems most useful when the problem is easily pinpointed —the control lab problem was complex," says Finsterbach.

To get around this complexity, the problem was divided into two major sections, each with several, easily pinpointed subproblems. The two sections



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If you're presently using a bacteriostat or contemplate the use of one in the near future, it will pay you to investigate the economic and antiseptic qualifications of Catalin BACTERIOSTAT CS-1. It has an extremely wide range of product applications and sales-stimulating potentials.

Samples, literature and technical assistance wait upon your request. Inquiries invited.

In addition to bacteriostats, Catalin chemical products include antioxidants, oil additives, alkylation products and special chemicals.

Catalin also produces a wide range of urea, phenolic, cresylic, resorcinol and melamine industrial resin formulations.

Catalin plastics include polystyrene, polyethylene and nylon molding and extrusion compounds.

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were brainstormed by 18 control laboratory chemists and production supervisors in two 1½-hour sessions.

The first session focused on the problem of recording the analyses, covered six subproblems. For example, the 18 brainstormers came up with 16 ideas in five minutes on how analyses should be recorded, 65 ideas in 15 minutes on how much information should be recorded and 33 ideas in 10 minutes in how to do it simply; 20 ideas in 10 minutes on the present use made of the record and 11 ideas in three minutes on its potential use; and 28 ideas in 10 minutes on how long the record should be retained.

At the second session, the brainstormers came up with 46 ideas on what should be reported, 12 on the best time for reporting the results, 16 on who should report the results, 16 on who should receive results and 36 on how results should be reported.

Choices, Not Solutions: But the toughest part of the problem solving was yet to come. "Brainstorming won't actually solve the problem—it only focuses on it," says Finsterbach. "Problem solving is often a choice of alternatives. Brainstorming gives more alternatives to choose from. It is a case of hitchhiking—adding positive ideas to other ideas."

All ideas weren't usable, of course (e.g., "don't record at all," and "use smoke signals to simplify the recording"). "Only the good ones should be shown to top management," Finsterbach told the group. And to weed out the good ideas, they brainstormed the procedure to follow in sorting the ideas, rating them, and also who should be on the evaluation committee.

Results: The six-man screening committee took five two-hour sessions to reduce the 274 ideas to 40 with potential value, subsequently made six recommendations. For example, separate laboratory log books should be eliminated. Instead, the actual analysis sheet should be kept on file in the laboratory. Results should be telephoned to the plant (although other methods were considered), and analysis sheets should be sent out if necessary. Only the essential information should be forwarded to the accounting department.

None of these suggestions is startling. Yet, they satisfy the objective and they were arrived at quickly.

Even if the time saved were not

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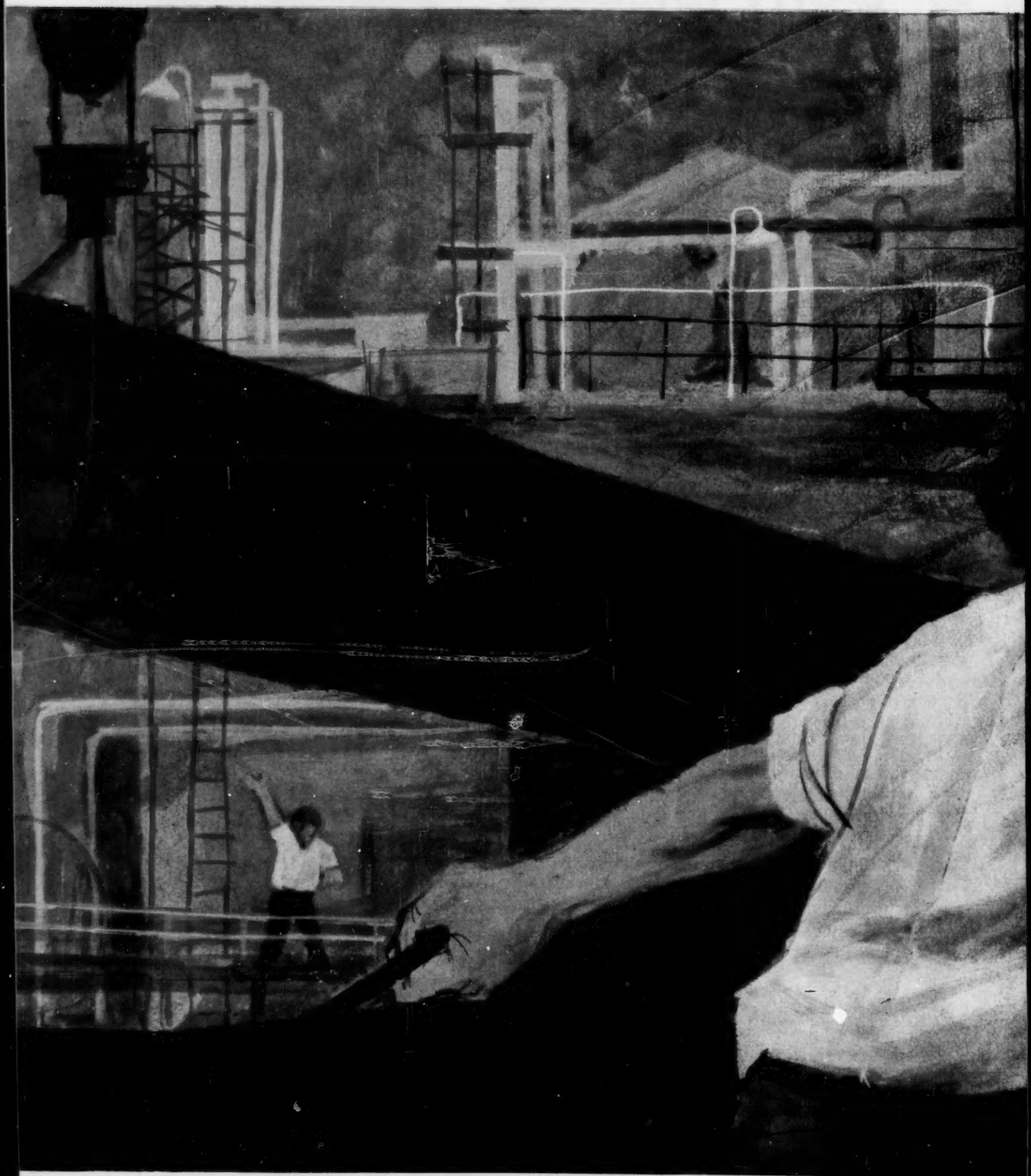

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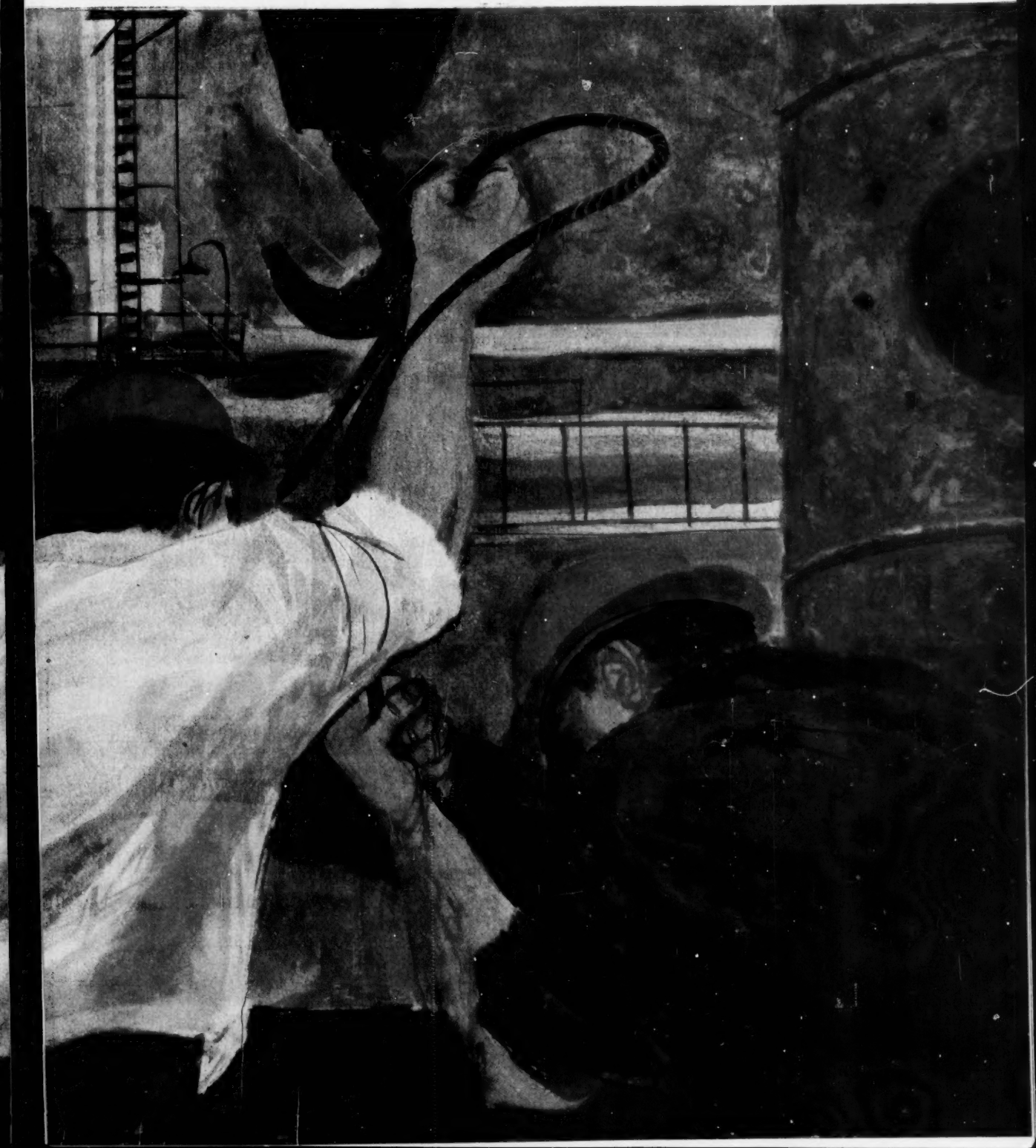
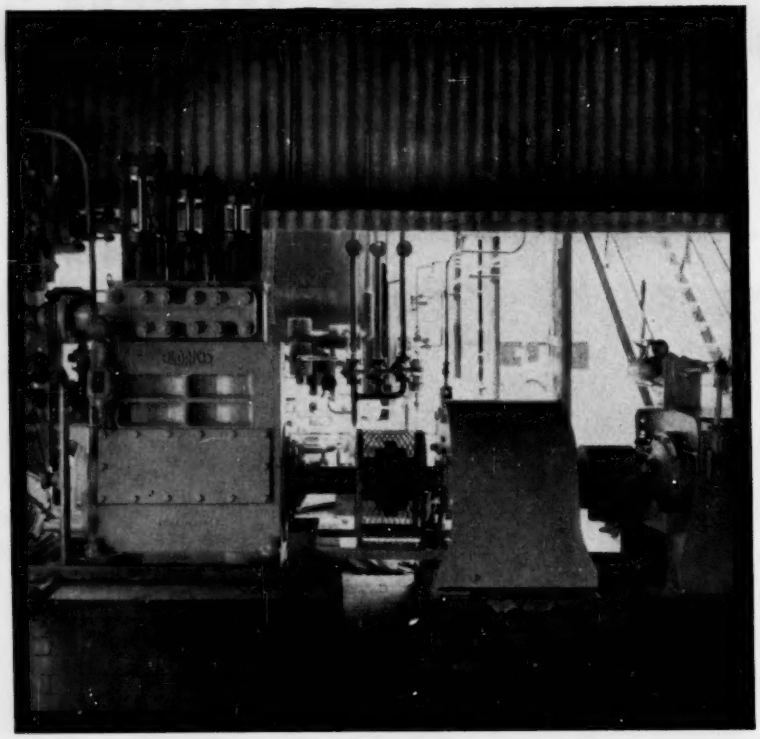




THE PRESSURES ARE HIGH...THE LIQUIDS CORROSIVE...THE PUMPS ARE ALDRICH...

At the Houston plant of Rohm & Haas Co., this Aldrich pump alternately introduces caustic and brine into one phase of the acrylate process for producing acrylic monomers.

The problem: Handle highly corrosive liquids at 3000 psi in a continuous process and *not* have severe maintenance problems.

What Rohm & Haas did about it. Company engineers specified Aldrich 1⅝" x 5" stroke Triplex Pumps for three reasons.

1. Compact, heavy-duty construction makes Aldrich pumps ideal for high pressure service.

2. Aldrich pumps are designed for easy maintenance. Fluid-end sectionalization permits quick removal of valves for inspection or replacement. No special tools are required.

3. Aldrich engineers can draw upon a vast store of experience when it comes to selecting the right materials for any pumping job. In this case, the entire fluid end . . . working barrel, suction and discharge manifolds . . . are forged Monel. Valve seats are Haynes Stellite. Valves and plungers are K Monel.

Results: According to the Plant Manager of the Houston plant, "maintenance requirements have decreased and pumping production improved. These Aldrich pumps lend themselves to easy maintenance."

How Aldrich can help you. Solving pumping problems like this requires specialized engineering skills and experience. We have those skills, and our experience comes from years of working with the chemical industry. We welcome the opportunity to discuss your specific problems . . . no matter what the liquid or how high the pressures. Aldrich Pump Company, 3 Gordon Street, Allentown, Pa.

the toughest pumping problems go to ALDRICH

put to productive use, says Finsterbach, the simplifications would at least relax the tension involved in tedious recording—and that in itself could be rewarding.

EQUIPMENT

Gas Producers: General Electric's Industrial Heating Dept. (Schenectady, N.Y.) is now offering new, low-cost producers of "rich" or "lean" exothermic gas, called Exalene gas. The rich gas has a number of uses in the treating of metals; the lean gas is suggested as an oxidation preventive for stored paints and varnishes, as a defoamer for synthetic resins, varnishes and oils during cooking, and as an explosion preventive in dusts.

•

Corrugated Ceramic: Corning Glass Works (Corning, N.Y.) has developed thin-walled (0.005-in. average thickness) ceramics with a honeycomb-like cross-section. Pyroceram (*CW, March 22, p. 62*) is used as one of the base materials for the new ceramics, called Cercor Structures. Cercor can withstand temperatures up to 1000 C, will operate continuously at 700 C. Suggested uses include gaseous heat exchangers, catalyst supports and structural applications.

•

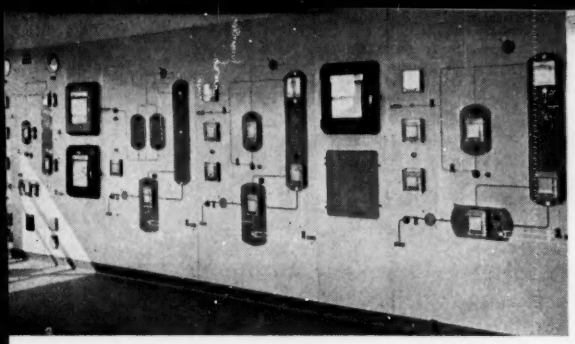
Small Metal Hose: Flexonics Corp. (Maywood, Ill.) claims to make the smallest metal (titanium) hose available to industry in commercial quantity—its new 0.050-in. (ID). Previous minimum was $\frac{3}{16}$-in. (ID) hose. Developed for use in atomic control systems, the new hose is said to permit further miniaturization of control elements.

•

Glass Fabric Laminate: National Vulcanized Fiber Co. (Wilmington, Del.) has replaced its Phenolite Grade GH-870 with a new grade, GH-871, that is superior in heat resistance. It retains 99% of its strength after one-half hour at 500 F, 82.5% after 100 hours.

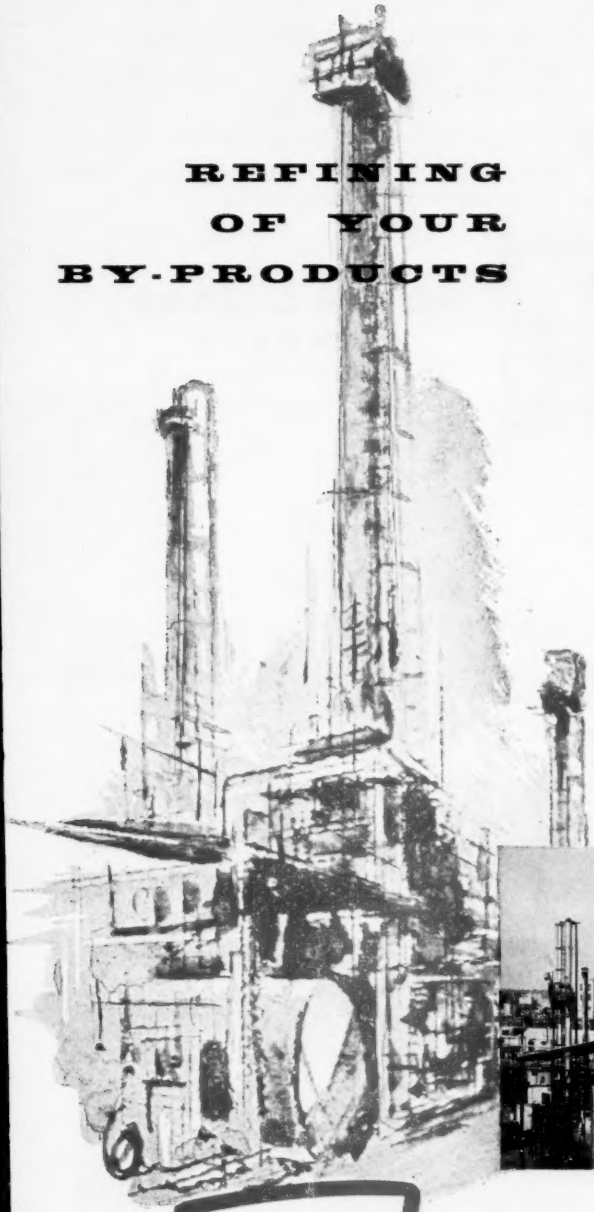
•

High-Pressure Valve: A new two-way packless solenoid valve for controlling air and gases to 2,500 psi. and liquids to 1,800 psi. is now being offered by Automatic Switch Co. (Florham Park, N. J.). Called ASCO-GV 60-565, the new valve is designed for low-temperature, high-pressure applications.



The facilities and experience of Truland may be employed advantageously for the economical upgrading and disposal of solvent mixtures and organic by-products.
Our technically trained personnel are available to discuss the refining of any solvent mixture or organic by-product.

REFINING OF YOUR BY-PRODUCTS



Partial List
of materials processed

- Acetone
- Amyl Acetate
- Amyl Alcohol
- Benzene
- n-Butyl Acetate
- n-Butyl Alcohol
- Butyl Cresols
- Butylene Glycol
- Capryl Alcohol
- Carbon Tetrachloride
- Chlorbenzene
- Chloroform
- Dibutyl Phenol
- Dibutyl Phthalate
- Dicapryl Phthalate
- o-Dichlorbenzene
- Diethanolamine
- Diethylene Glycol
- Dimethyl Phthalate
- Dimethyl Sebacate
- Dipropylene Glycol
- Dodecyl Alcohol
- Dodecylbenzene
- Ethyl Acetate
- Ethylene Dichloride
- Ethylene Glycol
- Ethyl Hexanediol
- Ethyl Lactate
- Glycerine
- Glycol Ethers
- Hexyl Alcohol
- Isobutyl Alcohol
- Isodecyl Alcohol
- Isooctyl Alcohol
- Isophorone
- Isopropyl Acetate
- Isopropyl Alcohol
- Methyl Alcohol
- Methyl Amyl Alcohol
- Methylene Chloride
- Methyl Ethyl Ketone
- Methyl Hexyl Ketone
- Methyl Isobutyl Ketone
- Monoethanolamine
- Naphthas
- Nitrotoluols
- Nonyl Phenol
- Octyl Acetate
- Perchlorethylene
- n-Propyl Alcohol
- Propylene Glycol
- Pyridine
- Toluene
- Trichlorbenzene
- Trichlorethylene
- Tricresyl Phosphate
- Triethyl Amine
- Triethylene Glycol
- Trimethyl Borate
- Vinyl Acetate
- Xylene

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- **Improved compatibility with other resins**
- **Stability of emulsions**
- **Better adhesion properties**
- **Solubility in alkalies, including ammonia**

Polymers of these acrylics can vary in properties from hard, tough solids to semi-liquids, depending upon the monomer used. In copolymerization, acrylic monomers can be used with vinyl chloride, vinyl acetate, vinylidene chloride, acrylonitrile, butadiene, styrene, and unsaturated polyesters.

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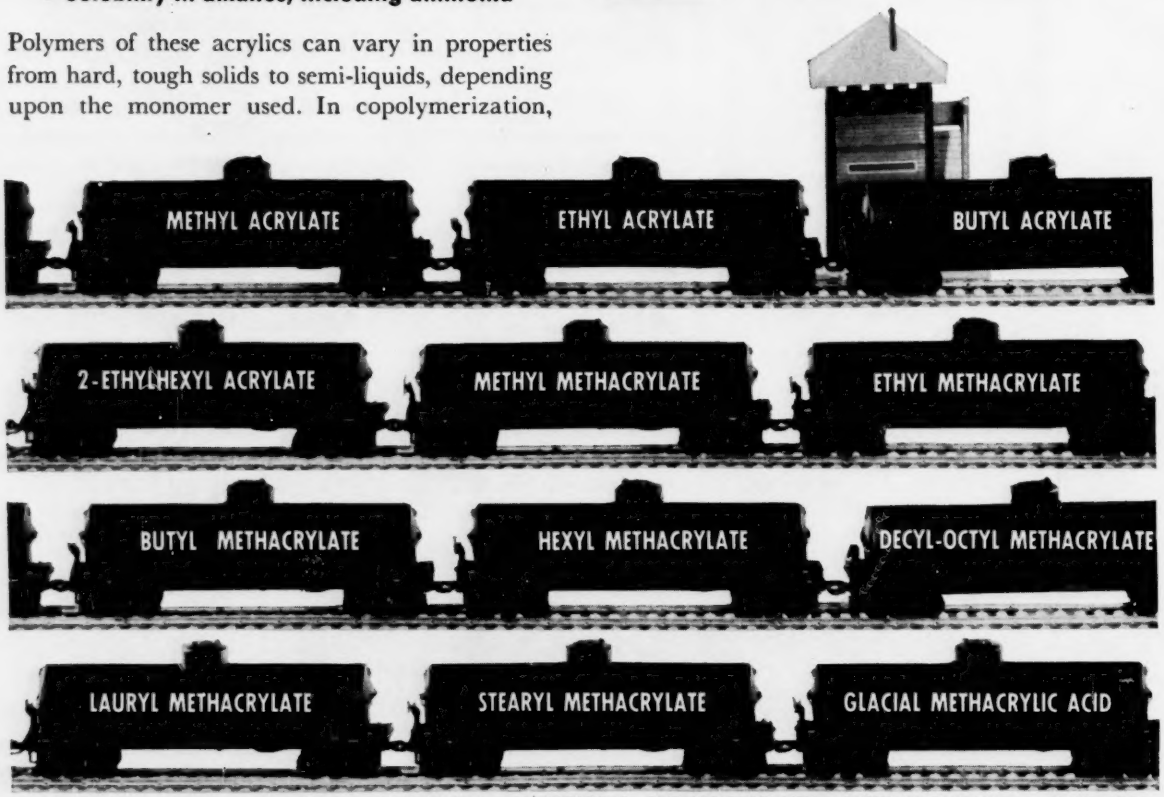

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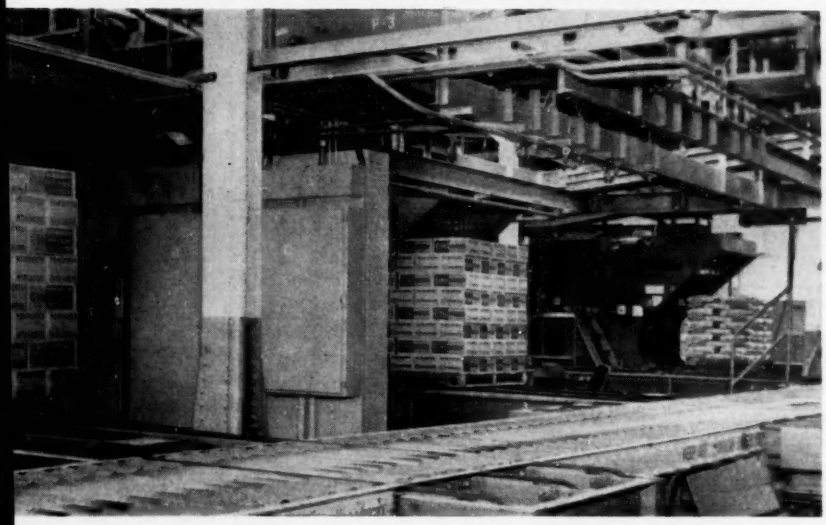
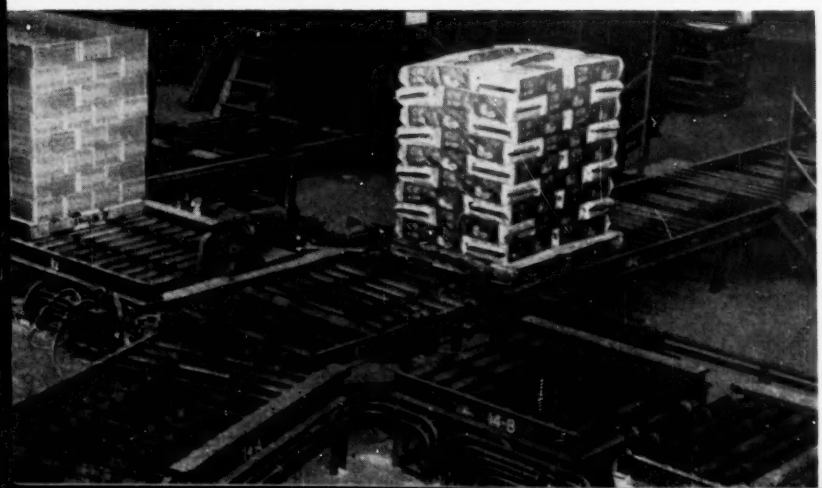
New Boost for Automatic Warehousing

In one minute, C&H's palletizer stacks twenty 100-lb. bags.



One conveyor takes output of all bag, bale and case palletizers. Turntables shunt loaded pallets to storage and loading points.



Automatic palletization of loaded multiwall bags — latest step in warehouse improvement — is getting powerful impetus this week from a new, $1.6-million installation at the Crockett refinery of California & Hawaiian Sugar Refining Corp. It has designed eight mechanical pallet loaders into an integrated materials-handling system capable of moving 600,000 tons of sugar annually.

Although not the first automatic pallet loaders, the C&H installation is by far the largest. C&H's installation uses three palletizers for bags only. Carbide's Electro Metallurgical Division put a mechanical palletizer for 100-lb. bags into service two years ago. Since then, a few other units have been installed by gypsum, sugar and asbestos companies.

The chemical industry consumes 875 million multiwalls annually. Hence, it's not surprising that automatic palletizers are stirring wide chemical interest. J. M. Huber is considering a unit for its South Carolina operations. Food Machinery and Chemical Corp. has an automatic bag palletizer on its drawing boards at San Jose, Calif. And Lamson Engineering (Syracuse, N.Y.) designer of C&H's equipment, is working up automatic drum palletizers.

Multiple Use: C&H's system handles cartons and bales as well as bags. (Most automatic stackers have been engineered for cartons or cases only.) The fully automatic bag palletizers, however, are the eye-openers.

With its new setup, says C&H, it has gained a number of advantages.

- Lessened manpower requirements. Manual handling of similar quantities would require about 80 men.
- Greatly reduced damage to loaded bags. Hand processing produces costly rips and tears, boosts rehandling and container costs.
- More uniform and better-balanced pallet loads. This enhances stacking characteristics and allows more efficient storage.
- Easier and more flexible production scheduling.

Automatic palletization is an expensive proposition. A single pallet

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It's more than likely A-C Polyethylene can help you too! Try it! Write today for further information.

Allied Chemical

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National Distribution • Warehousing in Principal Cities

loader for bags costs about $30,000-$35,000 (installed). Moreover, there's naturally an increase in electrical and mechanical maintenance costs. But carton palletizers yield savings of $9,000-$19,000/year, with 2-2½-year payout periods.

Full Job: C&H claims its new Lamson equipment mechanizes bag palletization several steps beyond other units now in use. For example, one currently offered unit palletizes bags, but it requires manual positioning of multiwalls before the unit's suction cups can grasp the sacks and stack them on pallets.

In the novel Lamson design, loaded bags are first mechanically formed into interlocking layers, then the positioned packages fall onto a waiting pallet. The machines can palletize, in one minute, about thirty-five 50-lb. bags or twenty 100-lb. bags.

Step by Step: In C&H's automated warehouse, the bag palletization begins when conveying equipment brings the 50- and 100-lb. multiwalls from packing stations on the second, third and fourth floors of the refinery, past a sorting station. There, an operator "programs" the identity of the bags onto a control panel and the bags are directed to one of six accumulator lines. Palletizing rates go as high as 30 bags/minute.

The mechanical palletizers for bags, cartons and bales are in one central location on the second floor.

After loading, the filled pallets from all units are discharged onto a common conveyor. Pallets can be routed by the station operator to one of four destinations in the warehouse by setting a switch at each loader. The loaded pallets pass over the central conveyor and turntables, then, according to switch setting, to their specific storage or shipping areas.

To provide service in case of emergency or maintenance shutdown, C&H has also installed a stand-by hand-palletizing station.

Besides C&H's three bag loaders, two move cases and three load paper bales. One unusually large loader can handle 60x44-in. pallets and loads up to 4,500 lbs.

C&H's installation will give integrated automatic bag palletizers an excellent chance to prove they are worth their price. If they succeed, chemical firms will have good reason to try such systems themselves.

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NEW Tri-Sure® Self-Venting Spout

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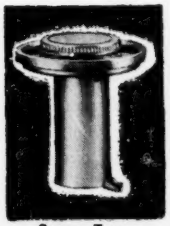
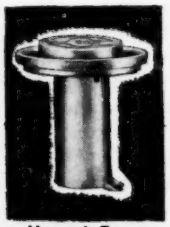


Screw Type



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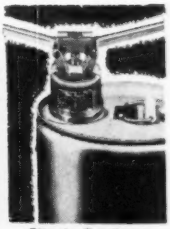

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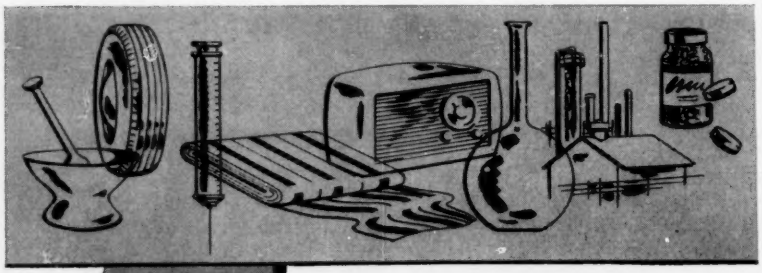

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SALES

Plastic Barges Closer

Commercialization of flexible plastic barges moved a step nearer last week as Dracone Developments Ltd. (London) told of plans to produce the tube-like units in sizes up to 1,100 tons. At the same time, Dracone demonstrated the largest prototype it has ever built, a 100-ft.-long, 5-ft.-diameter rubberized nylon barge capable of carrying 10,000 gal. of cargo (40 tons of crude oil). Price will be $7,500-9,000.

The British designers favor thin, rubberized nylon as the construction material. The new prototype is made from a specially woven nylon fabric coated inside and out with synthetic rubber. Total wall thickness is only 0.015 in. A 1-in. strip of the fabric can take a 2,000-lb. load. The entire container weighs only 2,300 lbs.

Plastic barges have caught the imagination of companies in the U.S. and in Germany (*CW, March 29, p. 57*). Reichhold Chemicals is going ahead with plans to import and distribute a German version. Recent tests in Venice, a company spokesman told *CW*, were successful, and a French firm has already placed an order for some.

Low initial cost and low towing power requirements are the main stimuli to rising interest in the plastic tubes. The latest British prototype, the Dracone Mark I, creates only 800-lbs. drag at seven knots and can be towed at that speed by a 60-hp. tug. In the 10,000-gal. size, the barge cost is claimed to be one-third that of a comparable steel unit; and for a 1,000-ton barge, the cost falls to one-sixth that of its steel counterpart.

The long, slim design favored by Dracone permits the barge to turn in much less than its own length by forming a "kink," which travels from forward to the "tail" as the unit negotiates an angle. This, claims Dracone, reduces collision damage and makes the barge easy to maneuver in harbors and inland waterways. And the shape also minimizes "wave drag," virtually nonexistent at the seven-knot speed. A 30-fold capacity increase raises tare weight only eight times, boosts the drag fourfold.

Initially, Dracone plans to make only the smaller, inland waterway sizes. But if tests pan out, it may make 10,000-ton oceangoing versions.

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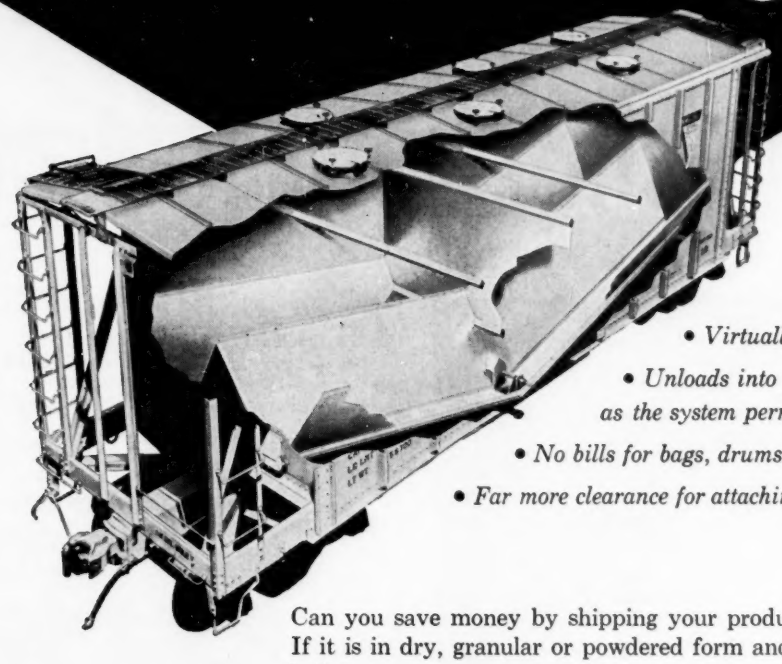

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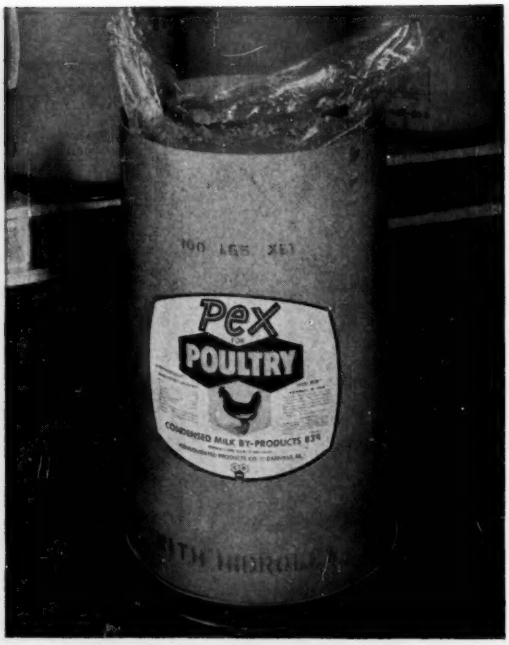
ANTIBIOTICS are packaged in double polyethylene bags, with inside bag and inner wall of outside bag completely sterile. Polyethylene packaging eliminated fragile containers, cut storage 5/6, freight cost 1/3.



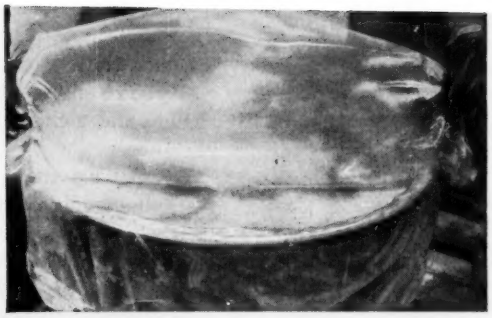
POULTRY FEED receives maximum protection in polyethylene bag and lightweight fiber container. The polyethylene bag safeguards the high moisture content of the feed on the inside and shields it from contamination on the outside.

ship with low-cost p

SKIN CLEANSER is protected from air and moisture by this unsupported film bag that remains unaffected by cleansing agents. Label and directions are clearly printed.

ANIMAL FEED packaging in corrugated box costs only 1/3 as much as in can formerly used. Polyethylene film liner has eliminated mold and slashed container weight.

PHOSPHORIC ACID has an inexpensive and safe container in this iron drum with a polyethylene liner. The polyethylene liner has saved thousands of dollars in inventory since the same drum can be converted quickly to ship many different types of chemicals simply by changing the liner.



DENTAL PLASTIC in film bags, sealed in cardboard canisters, stays useful for three years even in tropic dampness. Air shipment pressure won't burst bags.

PLANT FOOD in polyethylene bag and metal can illustrates how small shipments obtain maximum moisture protection and long shelf life at low cost. Polyethylene bag also prevents chemical reaction between product and metal can.

polyethylene film liners

Cut packaging costs for liquids and solids with lightweight boxes, drums, cans, and bags

Sales up... profits down? Fight the squeeze by improving your packaging efficiency. Protect both profit and product with low-cost film made from BAKELITE Brand Polyethylene. Polyethylene film assures maximum protection on the inside and permits the use of less expensive packaging containers on the outside. And too, more convenient and efficient packaging not only cuts costs but it also builds easier customer acceptance for extra sales.

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Ask your packaging supplier about shipping with low cost film made from BAKELITE Brand Polyethylene. Or write Dept. **JA-43M**, for the names of specialists in polyethylene bags and liners.

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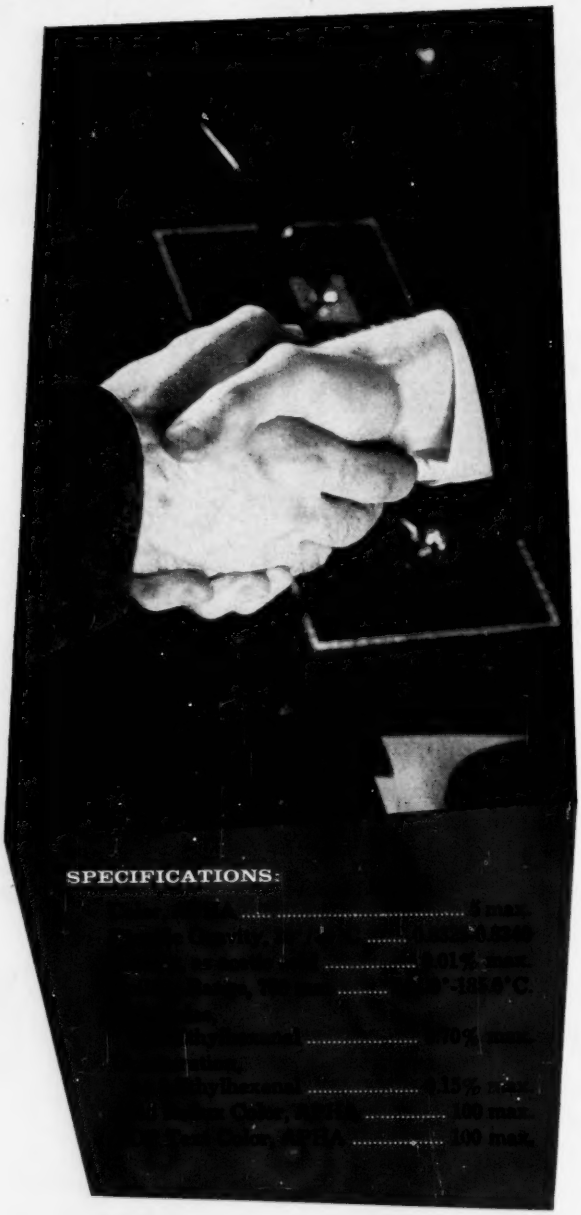

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SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York City; Framingham, Mass.; Cincinnati; Cleveland; Chicago; St. Louis; Houston. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

Government's Industrial Contracts for Cancer Chemotherapy Research

CONTRACTOR	PURPOSE	AMOUNT
Abbott Laboratories	Screening and methodology	$ 208,010
Armour & Co.	Methodology	66,735
Bristol Laboratories	Methodology and synthesis of Mitomycin C	408,603
Hyson, Westcott & Dunning	Thermophilic bacteriology	10,000
Merck & Co.	Laboratory and methodology	775,000
Wm. S. Merrell & Co.	Mouse screening	18,985
Parke, Davis & Co.	Screening and methodology	350,000
Chas. Pfizer & Co.	Screening and methodology	1,186,000
Pitman-Moore & Co.	Screening and methodology	91,770
Schering Corp.	In-plant screening	240,000
Squibb & Sons	Steroid laboratory and endocrine research	271,078
Syntex, S.A.	Steroid laboratory	60,000
Upjohn Co.	Steroid laboratory and methodology	345,000
Total to industry		$4,031,181

Bigger Tab for Anticancer Chemicals

Encouraged by record government contracts (chart above), drugmakers are investing more heavily in cancer chemotherapy research on their own. This week, two of the larger contract holders—Pfizer and Squibb—are under way with programs that show industry's new willingness to match federal interest in the research.

Pfizer is spending more than $2 million on cancer research this year, of which about $800,000 is coming out of the company till. Squibb, which last month laid the cornerstone for a new cancer research laboratory at New Brunswick, N.J., now plans to spend $7 million on cancer studies in the next five years. While the firm looks forward to steadily increasing government support, it will provide a sizable portion of this planned outlay from company funds.

A big reason for this new surge in research on chemotherapeutants is recent government policy that permits a drug firm to patent and sell drugs developed under government subsidy. Negotiations between Health, Education & Welfare Dept.'s patents board and drug company executives and attorneys in drafting such a patent policy took two years—since Congress first authorized National Cancer Institute to enter into research and development contracts with nongovernment labs.

While the workable patent policy was being set up, drug companies sort of trod water—signed contracts for only a fraction of the funds allotted by Congress and limited their participation to screening chemicals and similar projects not involving research on new drugs. Drugmakers rebelled against the government's insistence on unrestricted patent licensing of promising anticancer drugs.

Now that this stipulation has been eliminated, the drug firms are showing appreciably more interest. However, there are still currents of objection to a remaining provision: the U.S. Surgeon General may still license others to produce the drug, but he would take this action only if—after 90-day advance notice, formal hearing and consultation with outside ex-

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( ) Please send samples

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Name_____
Title_____
(Please attach to your Company letterhead)

RESEARCH

perts—he finds the drug's developer is unable to meet public demand.

Despite this provision, drugmakers have been encouraged to go ahead with government work—and the concomitant private investment it entails.

Familiar Courses: In picking projects, participating companies are sticking closest to the research fields they know best. At Pfizer's Smith Memorial Laboratory in Maywood, N.J., the accent is on finding antibiotics that have antitumor properties. A secondary program seeks better screening techniques for determining if any of the antibiotic broths have such activity.

Pfizer grows cultures from microorganisms obtained from about 500 soil samples weekly that are shipped to it from around the world. So far, screening the broths against five "standard" tumors has resulted in finding 1 or 2% that are active to some degree against one or more of the tumors. Pfizer gets an assist in this screening from Sloan-Kettering Institute, Southern Research Institute and Hazleton Laboratories.

In its new lab, Squibb will stress steroid research, augment this with a study of the endocrine system's relationship to cancer. Two hopeful Squibb compounds, currently being clinically evaluated, are testosterone and a bromine derivative of progesterone.

Wordwide Efforts: The U.S. effort, although it is now assuming impressive proportions, isn't, of course, the only significant cancer chemotherapy program. Japanese researchers, for example, have reported these compounds as having anticancer properties: aliphatic halogen-substituted tertiary amine N-oxides (Japanese Patent 7762); lenamycin, an organic acid amide isolated from a streptomyces strain (Meiji Seika & Co. Ltd., Kawasaki, Japan); carzinophilin, from streptomyces sahachiroi (British Patent 777,287); and others. The Russians claim DL -*p*- (bis-β chlorethyl amino) phenylalanine is used for treating malignant tumors (U.S.S.R. Patent 104,781).

But even the mountain of work already accomplished toward finding anticancer chemicals seems insignificant beside the task to come, in the opinion of cancer experts. That spells an even bigger investment by the drug firms that have now made finding cancer chemicals their business.

PRODUCTS

Rare-Earth Metals: St. Eloi Corp. (Cincinnati) offers all of the rare-earth metals including yttrium, scandium and europium in lots of 1 lb. or more. The metals have been reduced from oxides of 99.9% purity or higher.

•

Standards: New hydrocarbon standard samples available from Carnegie Institute of Technology (Pittsburgh) include ethylcyclopropane; 1,trans-2, trans-4-trimethylcyclohexane; 1,4-dimethyl-2-ethylbenzene. Price: $50/5 ml.

•

Black Wool: Six grades of carbon wool are now being manufactured by Barnebey-Cheney Co. (Columbus, O.). Special grades will be made to order.

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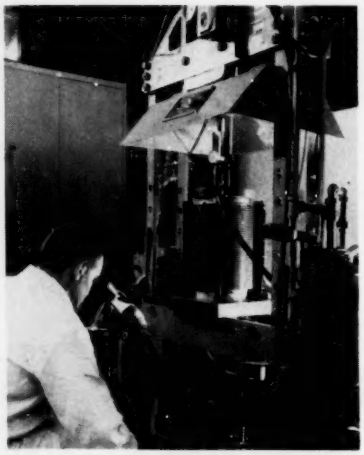
Glutamine Cut: Eli Lilly & Co.'s (Indianapolis) Agricultural and Industrial Products Division now offers DL-glutamine to research and develop-

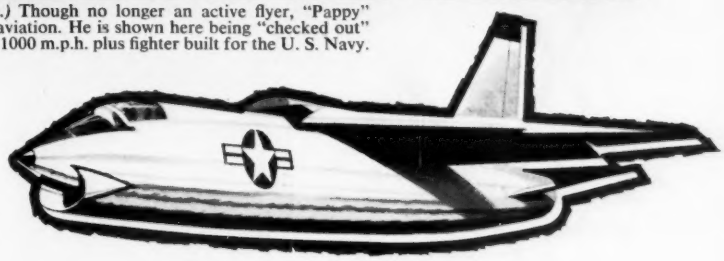


Forging Tougher Ceramics

This new, 60-ton hot press, developed by Westinghouse Electric Corp. (Pittsburgh), is proving to be a valuable research tool for ceramic research projects. It forms, then sinters, a powdered material in its water-cooled head. The press will be used to develop materials that are usable at temperatures between —60 C and 2000 C. Suggested uses include ceramic development projects on nuclear fuels, infrared transmission glasses and thermoelectric generator materials, and preparation of high-temperature oxide and intermetallic compounds.

Colonel Gregory "Pappy" Boyington, U.S.M.C. (Ret.) Though no longer an active flyer, "Pappy" maintains a deep and lively interest in the progress of aviation. He is shown here being "checked out" in the cockpit of an F8U-1 Crusader, Chance Vought's 1000 m.p.h. plus fighter built for the U. S. Navy.

still keeps 'em flying!



Colonel Gregory "Pappy" Boyington, U.S.M.C. (Ret.), is a fabulous figure whose daring exploits as a World War II fighter pilot wrote a bright page in the history of America – a dark one in the history of her enemy.

Ex-Flying Tiger, and leader of the Marine Corps' famed Black Sheep Squadron –"Pappy" Boyington relives his experiences in his autobiography, "Baa Baa Black Sheep," published by G. P. Putnam's Sons.

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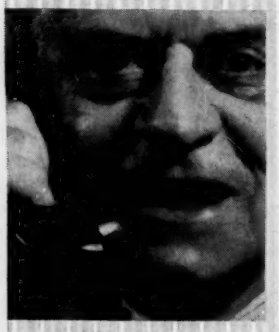

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RESEARCH

mental laboratories at less than one-tenth the current cost of L-glutamine. A new process permits the price cut.

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Diagnostic: Mann Research Laboratories (New York) now offers α-benzoyl-L-arginine amide hydrochloride as a new diagnostic tool for pancreatitis.

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Electrodes: Twelve new preformed electrodes for spectroscopic analysis have been added to the line of spectroscopic products offered by National Carbon Co. (New York), division of Union Carbide Corp. Special shapes machined to customer specifications also can be supplied.

EXPANSION

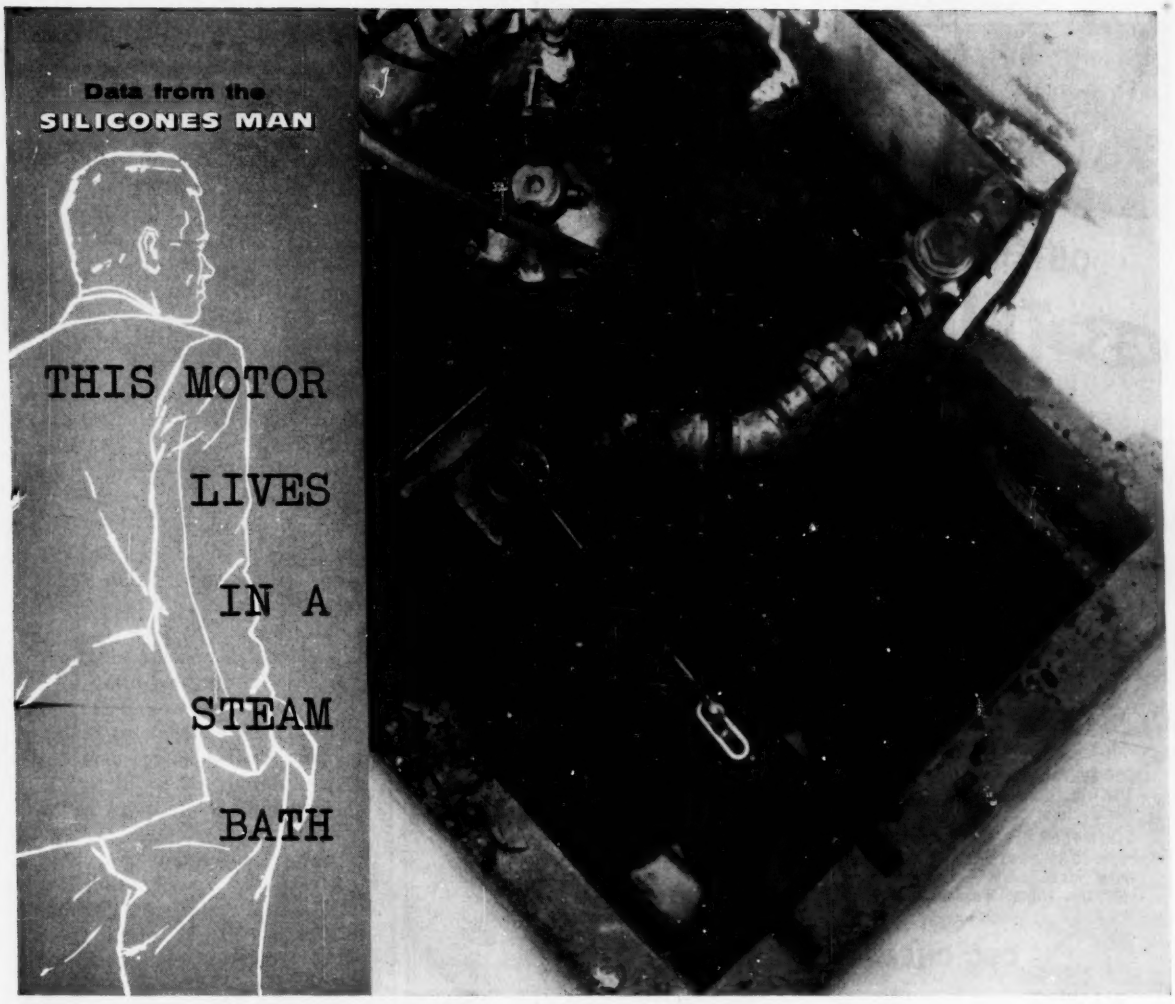
• Reliance Varnish Co. (Louisville, Ky.) will build a $125,000 research laboratory at its plant.

• Diamond Alkali Co. (Cleveland) plans to build a "multimillion-dollar" campus-style research center a few miles south of Painesville, O.

REPORTS

These reports are available from Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D.C.:

• Twelve Atomic Energy Commission reports in the field of chemistry: "Developments in Continuous Ion-Exchange Equipment for AEC Applications" (ORNL-2504, $1.25); "Reprocessing of Power Reactor Fuels—First Quarterly Progress Report to Jan. 1, '58" (DP-283, 50¢); "The Formation and Effects of Dibutyl Phosphate in Solvent Extraction" (DP-250, 75¢); "Sulfochlorination of Hydrocarbons Induced by Gamma Radiation" (ANL-5863, $2.75); "Decay Schemes" (UCRL-8289, $1.50); "Master Analytical Manual" (TID-7015, Section 1, 1,516 pages, $9; "Thorium—A Literature Search" (NLCO-727, 75¢); "Measurement of the Isotopic Enrichment of Uranium by a Direct Comparison Mass Spectrometer Method" (K-1369, 75¢); "Solubility of Water in Molten Alkali Chlorides" (ISC-929, $1.50); "Annotated Bibliography of Alpha, Beta, Gamma, Delta-Tetraphenylporphine" (ISC-921, 50¢); "The Solubility of Zirconium Tetrafluoride in Nitric Acid from 0-80 C" (IDO-14442,



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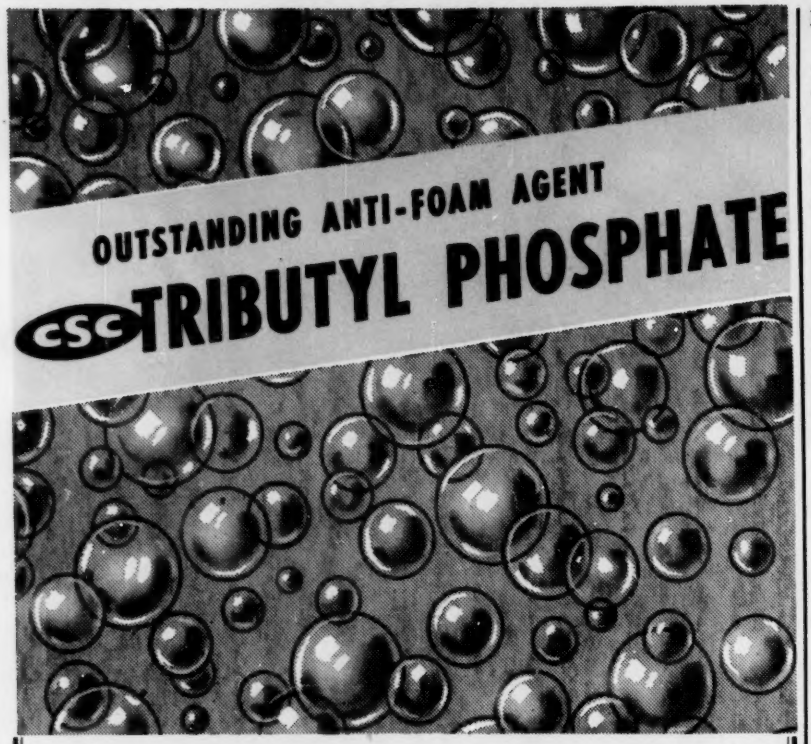

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RESEARCH

75¢); "A Hollow Cathode Discharge Tube for Isotopic Analysis: Progress Report" (IDO-14432, 50¢).

• A free price list of Atomic Energy Commission unclassified research reports listing more than 4,000 reports, including documents available since Jan. '58 (AEC Research Reports Price List No. 30).

• "U.S. Government Research Reports," a monthly list of new research reports. It is available on a subscription basis at $6/year from Supt. of Documents, U.S. Government Printing Office, Washington 25, D.C.

LITERATURE

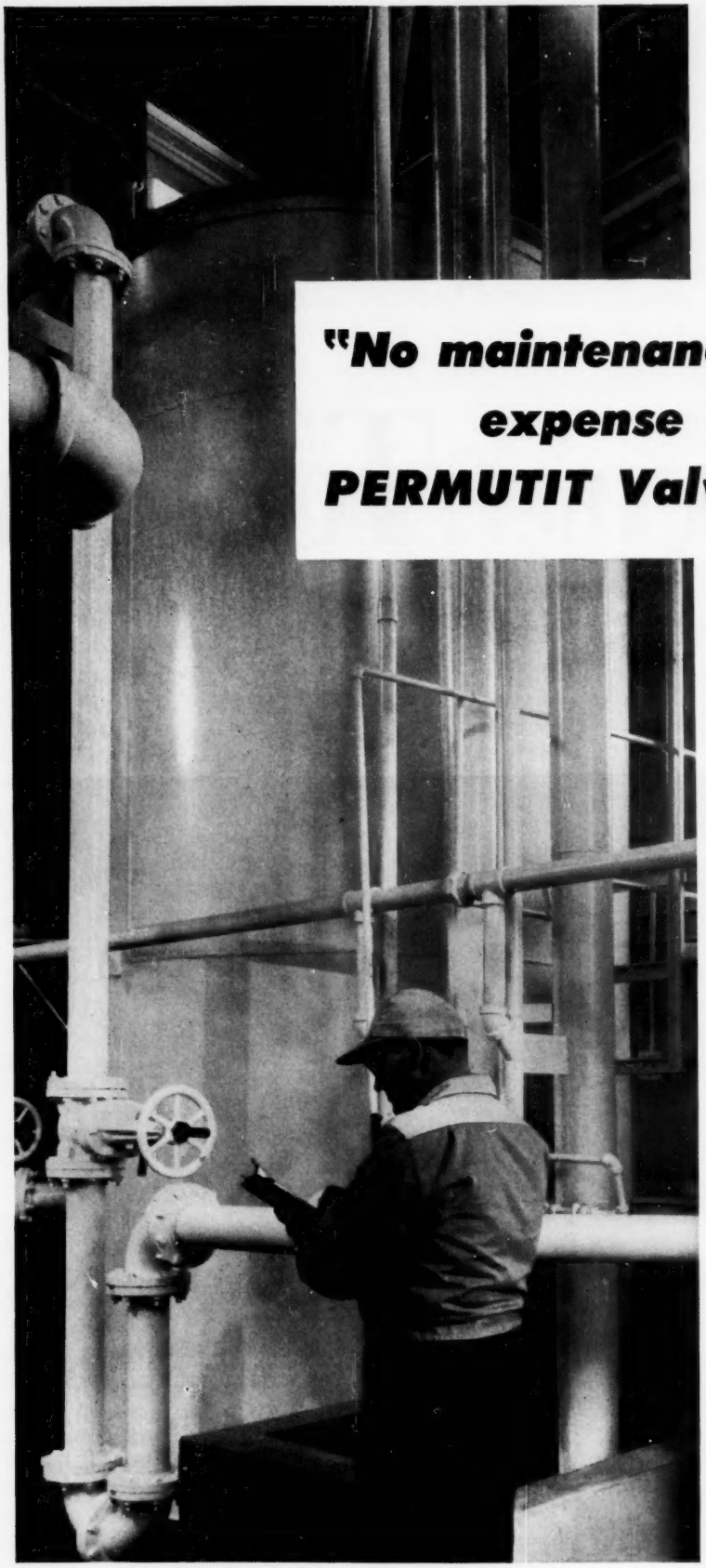
• "Controlled Atmospheric Conditions" is a free booklet prepared by Webber Engineering Corp. (Indianapolis). It is a catalog of newly available environmental testing chambers available from that firm.

• "New Polymerization Technology" is a new monthly list of titles, patentees or assignees and number of patents currently issued in the field of polymerization processes by Australia, Belgium, Canada, France, Germany, Great Britain, Italy, Switzerland and the U.S. Available from World Patents Monitor, P.O. Box 464, Rye, N.Y., it costs $65/year.

• "A Solvent Selector for Coating Formulations" is available (free) in chart form from Union Carbide Chemicals Co. (New York). It includes a large list of commercially available solvents, couplers, diluents and plasticizers, along with their essential physical characteristics.

• A new laboratory supply manual published by The Chemical Rubber Co. (Cleveland) contains separate supply and equipment sections with about 8,000 listings. Called Catalog 400, it is published every two years.

• A list of more than 300 chemical processes imported by the Japanese during the past three years has been compiled by Chemonics Inc. (Stamford, Conn.). It covers petroleum refining and petrochemicals, synthetic fibers and textiles, organic and inorganic chemicals, ceramics, resins, rubber, metallurgy, pulp and paper. List includes the licensors, licensees, cost of license, specific processes acquired. The brochure is designed to present a picture of the licensing situation, prospective competition, etc. Price: $250.



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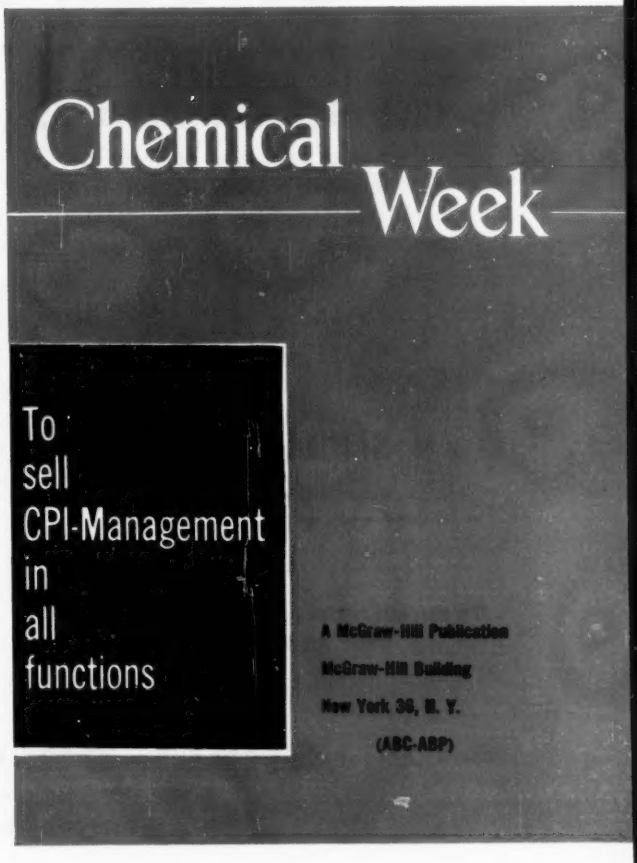

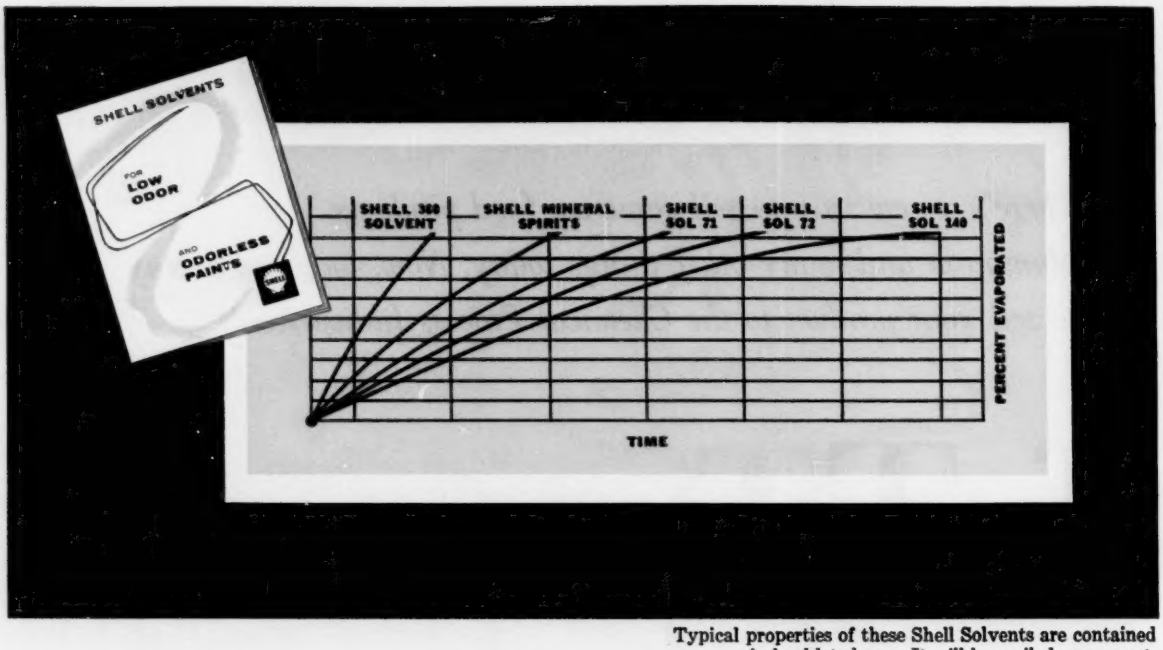

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Technology
Newsletter

CHEMICAL WEEK
October 4, 1958

Load-carrying capacity of lubricants is doubled by an atmosphere of nitrogen, according to new findings at Southwest Research Institute (San Antonio, Tex.). SRI is researching (under Air Force sponsorship) the lubrication requirements of missiles and space vehicles and feels the discovery may help keep power plant weights for such vehicles to a minimum.

Tests so far have been made using mineral oil, either alone or fortified with each of three different "extreme pressure" additives—chlorine, phosphorus and sulfur types. All exhibit increased "gear load-carrying capacity" when air is excluded. Whether the same effect applies to other types of lubricants isn't known yet. But studies are under way using synthetic lubricants.

•

A commercial method of making ductile beryllium castings is the goal of a new Air Force contract that has just been awarded to The Beryllium Corp. (Reading, Pa.). Currently, nearly all beryllium fabrications are made by powder metallurgy techniques because production ingots of the metal are not suitable for further working by conventional methods. (*Also see Washington Newsletter, p. 28.*) The Air Force is looking for ways to refine existing metal casting methods (e.g., centrifugal, pressure and vacuum casting) so that beryllium can be cast into structures suitable for fabrication into sheets, rods, bars, etc. The metal is three times stronger than steel on a strength-to-weight ratio basis; weighs about the same as magnesium and retains its strength at temperatures up to 1200 F. Success of the project would probably lead to sharp increase in beryllium use and substantial reductions in the cost of the metal.

•

Diabinese (chlorpropamide), a new oral diabetes drug, was described this week as twice as powerful, longer-acting than the other sulfonylureas (tolbutamide, carbutamide) tested for the same types of diabetes. Pfizer researchers made the report. The occasion: a three-day conference sponsored jointly by the New York Academy of Sciences section of biology and by Pfizer, which drew 65 reports on the drug by researchers and clinicians in the U.S. and 18 other countries.

•

Merck says its ultrapotent new steroid hormone Decadron (*CW, June 28, p. 58*) is living up to its early promise. Case studies on 1,200 patients so far show the drug has much greater anti-inflammatory power, milder side-effects than other steroids used in therapy. A report is pending on clinical testing involving 1,700 physicians, 20,000 patients.

•

Victory over wheat rust is now in sight. Tests at the Canadian Dept. of Agriculture research laboratory at Winnipeg indicate nickel chloride will completely eradicate the rust. However, the compound's effect

on wheat kernels hasn't yet been established. Treatment with the compound is reported to cost not more than 15¢/acre.

While the principal aim of the laboratory has been to develop rust-resistant varieties of wheat (e.g., Selkirk wheat) rust mutations have frequently overcome such resistance. Now researchers F. R. Forsyth and B. Peturson believe they may have a suitable eradicant that is cheap and easily applicable and which does not deteriorate in storage.

•

Underground storage of by-product propane and butane is planned for output of gas from a plant now being built in the southeast corner of Saskatchewan. Three large caverns with a combined capacity of 14 million gal. are being readied by Dome Petroleum, Ltd., and Provo Gas, Ltd.; they will process casinghead gas from the 708-well Steelman field into dry gas for distribution by Saskatchewan Power Corp. The liquefied propane and butane will be shipped to the storage caverns by tank car. Storage pressure in the caverns will be maintained by pumping in saturated salt solution as the gases are withdrawn.

•

Electron-beam vacuum welding—a new fusion welding technique—was described at this week's Ottawa meeting of The Electrochemical Society by W. L. Wyman and W. I. Steinkamp, of General Electric Co. (Richland, Wash.). The process involves focusing a beam of high-velocity electrons onto the work piece in a vacuum chamber. Reactive metals such as zirconium, titanium and columbium reportedly can be welded with ease; consistently high-quality welds have also been obtained on most of the more commonly used industrial metals.

•

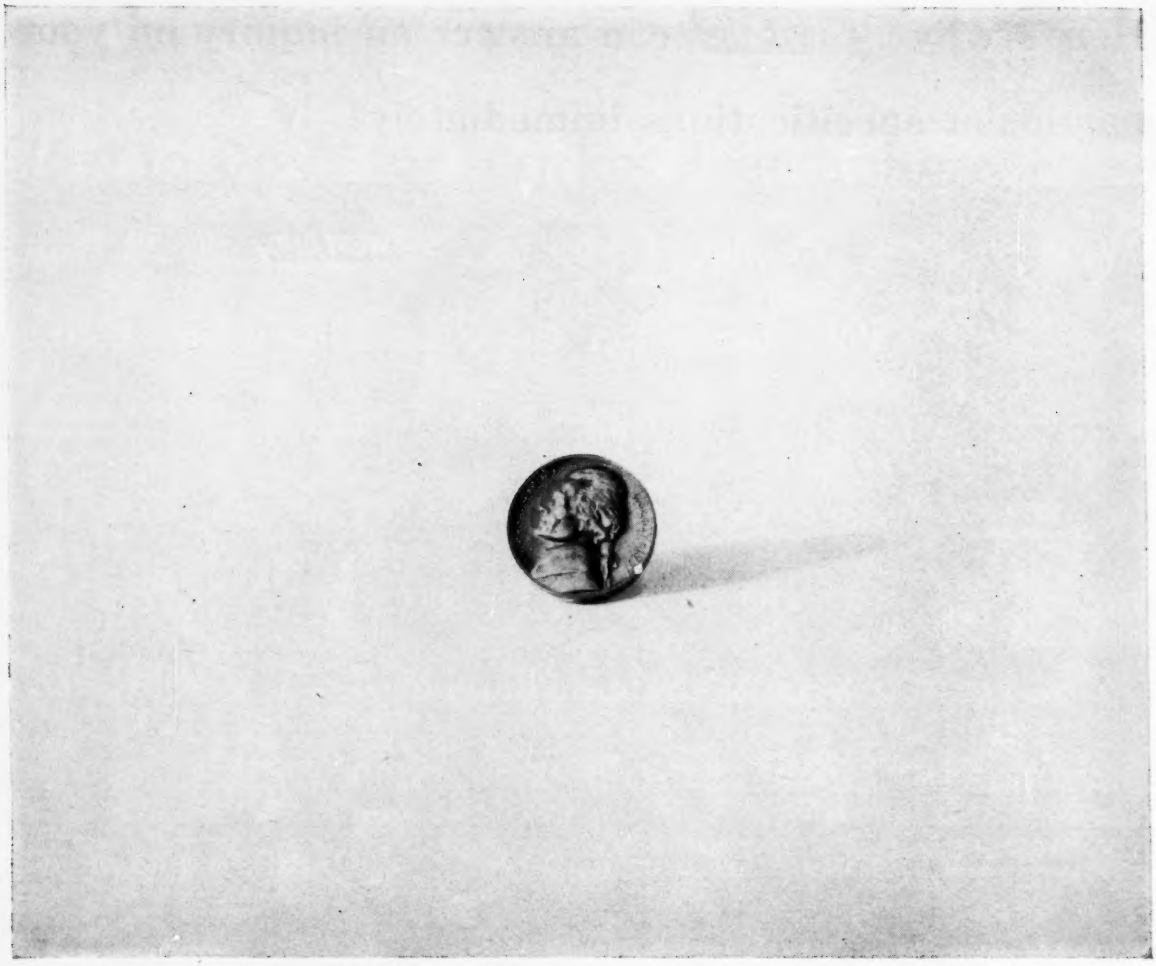
Strategic Materials Corp. and Koppers Co. are guaranteeing economic performance of integrated steel plants using their jointly developed Strategic-Udy direct iron reduction process (*CW Technology Newsletter, Oct. 12, '57*). The process employs a rotary kiln and electric-arc furnace in place of a blast furnace-coke oven combination, requires "reasonably priced electric power and advantageous location of raw materials."

•

Cattle feeding tests of Eli Lilly's Tapazole (1-methyl 2 mercaptoimidazole) are working out well at Iowa State College (Ames). Steers getting the compound consume less feed and gain more weight per pound of feed. But the economics of this improvement depend on the ultimate cost of the chemical—which is not in large-scale commercial production. Tapazole feeding is still under study and is not yet permitted by Food & Drug Administration. Medically, the compound is used for treatment of overactive thyroid gland in human beings.

•

Ball bearings of General Electric's Lexan polycarbonate resin are now being made for certain ordnance equipment. The plastic features resistance to mechanical and thermal shock.



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'How to Do It' for Market Researchers

Last week, the nation's market researchers converged on Indiana's famed old spa, French Lick, for the annual resort meeting of the Chemical Market Research Assn. Poor weather precluded much use of the resort's golf and tennis facilities but didn't halt the serious business of trading information about market research techniques.

Sessions covered everything from electronic computers to interviewing techniques.* One innovation, new for CMRA, was the so-called Market Shop; company spokesmen described market research techniques used to develop specific new lines of chemical products, presented detailed "case histories," and faced the probings of specially selected "critique panelists."

Polyox Story: R. L. Bateman, of Union Carbide, outlined the contributions of his company's various departments in development of the Polyox chemicals.

Polyox development began early in '50, when Carbide's research labs began studying polymerization techniques that would yield high-molecular-weight polymers of ethylene oxide at an economical rate and in substantial quantities. These techniques paved the way for pilot plants, then large-scale production. Concurrently, the Market Development and Market Research groups stepped into the budding program.

The Market Development group made preliminary appraisals of promising uses for the chemicals, while the Market Research team began investigating such market factors as likely competition and potential growth rates.

Both Market Development and Market Research groups concentrated on the more promising outlets for Polyox resins after a commercial process was developed. Long-range markets were appraised, the most important ones were pinpointed. Most promising market for Polyox resins was in warp sizing of textile yarns—a fact proved by the Market Research group's accurate survey of the total market for water-soluble gums and resins.

Market Development then took over, began laboratory studies, told the Process Development and Production Dept. what resin properties were needed to make the chemical suitable for warp sizing.

Bateman sums up the contributions of market research to development of a new product line like this: (1) determination of raw-material requirements, (2) exploration of specific market potentials, (3) appraising size of uses which can't be analyzed by analogy to existing products, (4) determination of most-sought-after qualities and properties.

Chemicals from Fat: "On occasion, no marketing research can be good marketing research." This introductory remark, by Hoyt M. Corley, of Armour & Co., actually wasn't intended to be a debunking of market research. Corley's point—illustrated by a case history of Armour's development of fat-derived chemicals—was simply that sometimes a realistic market study, at too early a stage, might kill valuable basic research projects.

His example: in 1929, Armour launched into basic research on fat chemicals in the face of such problems as a limited market for fat, fluctuating prices, shrinking export markets, limited scientific knowledge about the properties of fats—all good reasons to drop the project.

Nevertheless, a large number of fat-derived chemicals were developed, field-tested, improved and re-evaluated. Market for these chemicals hinged on discovery of new uses.

Newly developed primary amines were already growth chemicals when the first comprehensive market research project was started. The market study led to construction of a 3-million-lbs./year plant. Exactly when predicted by Armour's market researchers, sales volume passed the 3-million-lbs./year mark in '43.

A second study predicted a sales volume of 12 million lbs./year in postwar years, and plant capacity was doubled in '44. In '48, a third marketing study showed that the expected market for amines, amides, nitriles, etc., was more than 30 million lbs./year. As a result, new facilities went into production in '51.

For other products of the chemical division, too, market research played an important role in assessing market and profit potentials. Consequently, Corley says, the market research department has become a permanent factor in guiding management in expansion and marketing decisions and in followup.

Nitroparaffins: The role of market research in development of Commercial Solvents' nitroparaffins, according to CSC's F. E. Dolian, is difficult to trace in an orderly fashion because the project—which stretched over a period of 20 years—was "played by ear."

The project started in '35 with the acquisition of an exclusive license under a basic nitration patent issued to the Purdue Research Foundation. At that time, Commercial Solvents, like most other chemical companies, couldn't boast of a formal market research group. Nonetheless, by '40, a semicommercial plant had been set up and some nitroparaffins and derivatives were being made; considerable general market data had been informally accumulated.

After World War II, a renewed, full-scale market survey was started. At the same time, process development was begun to increase unit output and improve product quality.

Another market survey, in '48, showed that the protective coatings industry could be a prime customer—if the Commercial Solvents products were improved.

Five years later, a followup market survey indicated that a 10-million-lbs./year basic nitration plant could be supported by the more apparent potential markets. Furthermore, the company could soon expect to sell the products profitably.

Admittedly, Commercial Solvents' application of market research to the nitroparaffin project was sporadic. But the market researchers, said Dolian, played a key role in selection

*In addition to the Market Shop, other talks presented at the meeting were: "Statistics for Industrial Marketing Research" by Werner Hirsch, of Washington University; "Developing an EDP (electronic data processing) Program" by J. D. Porter, of American Mutual Liability Insurance Co.; "Solution of Certain Market Research Problems by Computers" by W. A. Clark, of Monsanto Chemical; and "Getting More Out of Interviewing" by Audrey Langdon, of Alec Jordan Associates.

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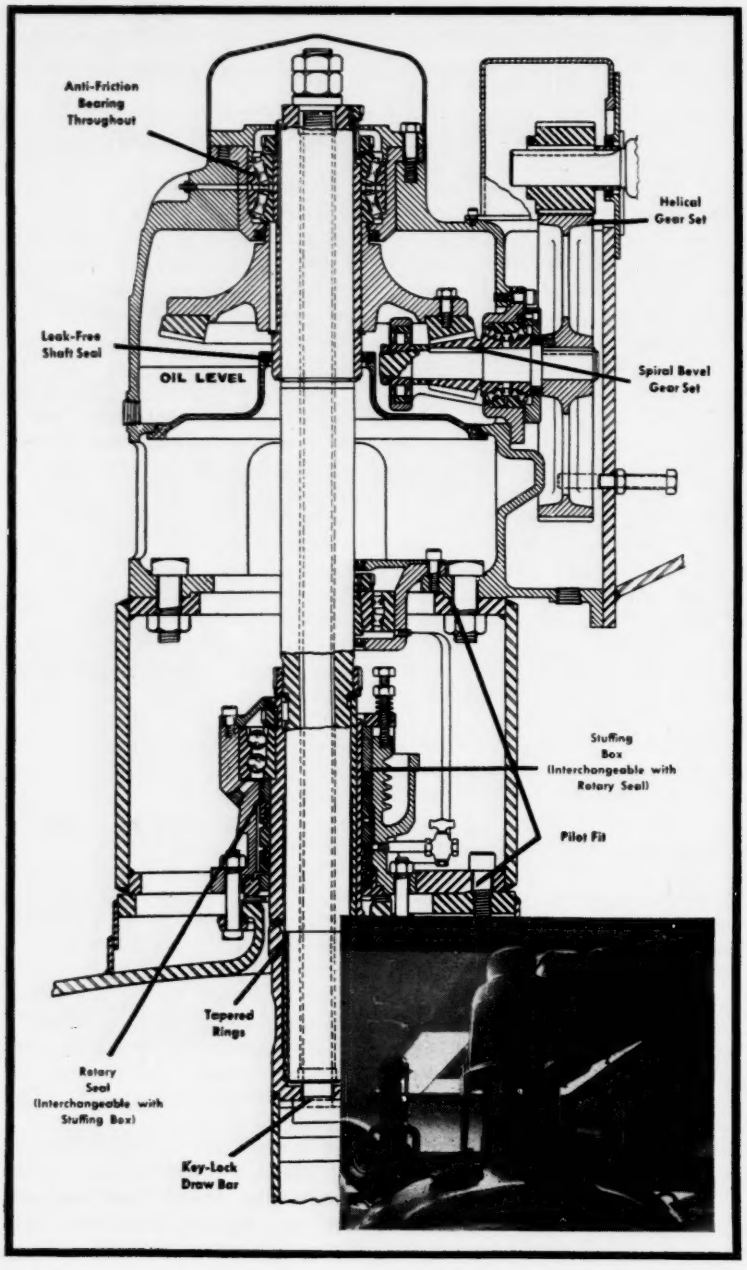

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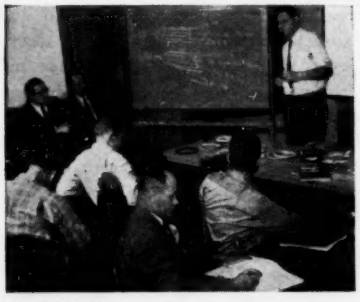
CORROSIONEERING NEWS

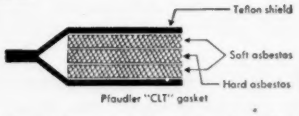
B. G. "Joe" Staples talks about Teflon gaskets for corrosive service



Mr. Staples runs our program of Pfaudler Technical Courses for plant maintenance men.

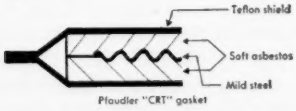
One of his special subjects is "Teflon Gaskets." Thirteen years ago he began devising a gasket for universally corrosion-free service on both glassed-steel and alloy equipment.

Many hundreds of tests later, he and his staff created two separate designs. Both combine Teflon's versatile corrosion resistance with the rigorous physical properties of their fillers.



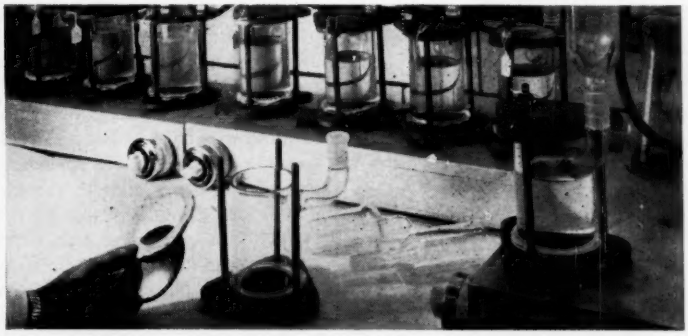
The Teflon envelope on this design licks the corrosion problem. The center core of hard, compressed sheet asbestos makes it rigid and strong. Thin layers of special soft asbestos let you compress the gasket to get a tight seal without danger to glassed-steel flanges.

This design is for service up to 300° F. and internal pressures to 125 psi.



For temperatures up to 500° F. and pressures to 300 psi, we developed this gasket with a thin corrugated mild steel core. This gives the gasket added strength and a springlike action which helps keep the seal tight and reduces the need for shimming.

FREE BULLETIN. To find out more about Teflon gaskets, send the coupon for Bulletin 502.



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of areas in which money could be usefully spent to develop a profitable nitroparaffin line.

Chelating Chemicals: An unorthodox market research project was Dow Chemical's probe to help decide if the firm should purchase a company producing chelating agents.

The survey, said Dow's Parker Frisselle, was conducted "under guise of considering entry into the same field as a competitor of the company being considered." This approach, said Frisselle, "has the advantage of appealing to those who have had some problems with the company under consideration and also brings a glint to the eye of many purchasing agents as they contemplate an additional supplier, possible overproduction, and subsequent lower prices. Thus, it is fairly easy to get market information without revealing one's true interest."

Because of the varied uses for chelates, it was difficult to forecast demand and potential markets accurately. Many former "proved" uses for chelates have "faded away," while other uses have increased rapidly; in fact, about 60% of today's markets for chelating agents were unknown in '49.

Time and product development—not market research—were the two important factors which revealed the most important outlets for chelates. Only "sheer luck," not "specific insight," could have predicted '58 chelate markets 10 years ago, comments Frisselle.

To would-be producers of chelating agents, Frisselle had this final word of advice: the approximately 11-million-lbs./year national market for chelating chemicals is served by a combined 75-million-lbs./year plant capacity of at least 16 producers. "Contrary to some of the other product lines you will hear about," he concludes, "this business suffers by being too easy to get into."

Embarrassing Questions: Those presenting Market Shop case histories were then faced with questions from a select panel—A. D. Little's Richard Messing, Diamond Alkali's George Rugar, Roger Williams (of his own firm), and American Cyanamid's Samuel Koonce. They had examined the presentations in advance.

Messing put it bluntly, said that in these cases, market research techniques were applied too late in all cases cited. And Rugar agreed.

Williams centered his critique on another point—that no speaker thought it necessary to discuss the important part money plays in getting a new product on the commercial road. He pointed a finger at CSC's nitroparaffin venture, said it showed a "singular lack of a necessary gambling spirit on the part of management."

But there were a number of more specific questions. Cyanamid's Koonce asked why, if market research had really played a strong role in the launching of Carbide's Polyox chemicals, there was a five-year delay before market development and research entered the picture.

Bateman, who had presented the Polyox story, replied that market research had to wait five years before an economically feasible commercial process for the chemicals was developed.

Koonce also had some sharp questions for Armour's Corley. "How can you prove that no market research is at times better than some market research?"

Corley said that an early market evaluation would have discouraged—even scuttled—any basic research. And he cited some work done by some Armour technical men who had gone out into the field and interviewed all the top men in industry. All these men, said Corley, could foresee no use whatsoever in the future for amines, amides, and nitriles.

Money Problems: In reply to a query from Williams, about the delay by CSC in getting its nitroparaffins into commercial production, Dolian said that it was a small company at the development time, "just not willing to spend money fast enough to speed up such market development."

The company had to proceed slowly—but Dolian agreed the program could have been speeded by greater application of market research.

Guidance Spurned? Koonce's question, "Why did Dow take five years deciding to purchase a chelate-making company?", was neatly parried by Frisselle's facetious comment: Even though a procrastinating market research department might indicate the inadvisability of a course of action, management many times does not see fit to relinquish to that group its prerogative in deciding on mergers or acquisitions.

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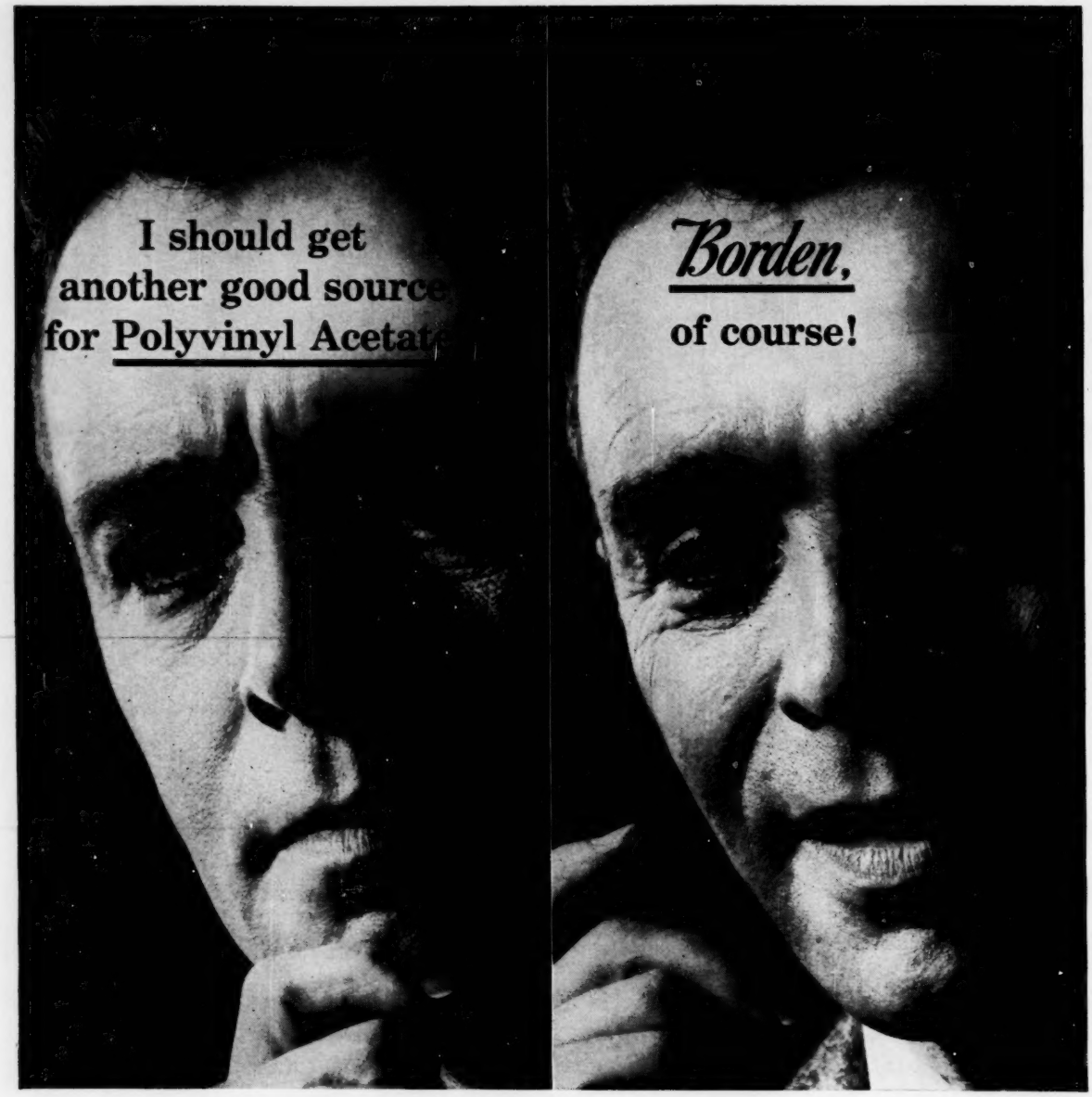

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Market Newsletter

CHEMICAL WEEK
October 4, 1958

In many quarters of world metal markets, emotions are running high this week. Adoption of lead and zinc import quotas, for example, irk aluminum marketers; meanwhile these metals—and tin, too—are becoming more deeply enmeshed in international politics, which makes prediction of market trends more difficult than ever. (*Also see Washington Newsletter, p. 27.*)

Look at the tin situation. It's getting harder than ever for marketers in non-Communist nations to outguess the Russians, who, in the past few weeks, have been accused of dumping large quantities of tin into world markets in a deliberate effort to sabotage normal trade channels (*CW, Aug. 23, p. 47*). Earlier this month, for example, Chong Khoon Lin, president of All-Malaya Chinese Ministers Assn. accused the Russians of "economic warfare" and asserted that "the Malayan tin industry is really in a desperate position. We expect the situation to deteriorate further during the fourth quarter starting in September. We expect the International Tin Council to cut production by 60%."

But now the Russians may do an about-face, according to reports filtering in from Asia. Soviet spokesmen, it's said, hint that Russia will curb further excessive tin exports—a move that some outside observers would view as proof that the Russians had only a temporary surplus to dispose of. Another point of view is tied to Soviet trade statistics, which indicate that Communist China was the source of the Russian tin—a source that may have suddenly dried up because of current military activity on the China shores.

Here at home, U.S. lead and zinc producers are closely studying the government's imposition of import curbs effective Oct. 1. The curbs on imports of foreign produced metals may result in a more-than-30% cutback from '57 shipment levels.

Some observers view these curbs as a big step in the stabilizing of world lead and zinc prices; others fear that relations with other nations —Canada in particular—will be further strained.

Complaints by Canada about the U.S. zinc/lead quotas will likely help lessen chances that U.S. aluminum producers will get similar protection in the near future. Envious and irked by the good fortune of a competitive metal industry, U.S. aluminum producers are certain to complain loud and long in the weeks ahead about the havoc that "dumped" aluminum is wreaking on the capacity-heavy and demand-short U.S. industry. Right now, however, their chances of finding many sympathetic ears appear slim.

•

The Navy's new boron fuel plant at Muskogee, Okla., now close to completion, is being readied for dedication on Nov. 1. The $38-million

installation—built and to be operated by Callery Chemical—will produce HiCal, a boron-based high-energy fuel used by Navy jets and missiles.

•

Startup of a new ammonium nitrate plant at New Castle, Pa., by American Cyanamid, marks completion of the firm's industrial explosives rebuilding and expansion program—a program that has upped Cyanamid's explosives capacity 60%.

The expansions were spurred by rapidly increasing consumption of explosives in mining and quarrying, construction and highway building. The last two outlets are expected to consume half of the U.S. output of industrial high explosives by '60.

•

Dow Chemical's new chlorine/caustic unit at Plaquemine, La., is in. Shipments will begin Oct. 1. It boosts the nation's chlorine output another notch toward 5 million tons estimated for '60.

•

An ethylene unit with design capacity of 200 million lbs./year— but easily expandable to 300 million lbs./year—has been brought onstream by Petroleum Chemicals, Inc., at Lake Charles, La. Other products turned out in the big complex include propylene, butadiene.

Part of Petroleum Chemicals' ethylene output will go to Calcasieu Chemical, whose 8-million-gal./year ethylene glycol unit on nearby land is operated by PC. First shipment of Calcasieu glycol—some 250,000 gal.—was made last week by barge to Mineral Industries in Chicago.

•

Additional reactors and process changes doubled the capacity of Stauffer Chemical's Trithion insecticide-miticide unit at Henderson, Nev. The original plant came onstream last April, could not make the insecticide fast enough to meet demand, according to Stauffer.

•

Price of technical-grade itaconic acid is cut 10¢/lb. by Pfizer, will now sell for 39¢/lb. in carload lots; the refined materials will carry a no-change 54¢/lb. tag, in carload lots.

•

And cut 2¢/lb. is Dow's Latex 566—a paint vehicle made especially for metal finishing. New price: 36½¢/lb., solids contained.

SELECTED PRICE CHANGES — WEEK ENDING SEPTEMBER 29, 1958

	Change	New Price
UP		
Silver bullion, ingots, c.s., Troy oz.	$0.0025	$9.88875
Tin metal (Straits)	0.02875	0.94375
DOWN		
Potassium iodide, USP, cryst., or gran.	0.03	1.40
Tallow, inedible, fancy, bleachable, tanks, dlvd.	0.00125	0.07875

All prices per pound unless quantity stated.

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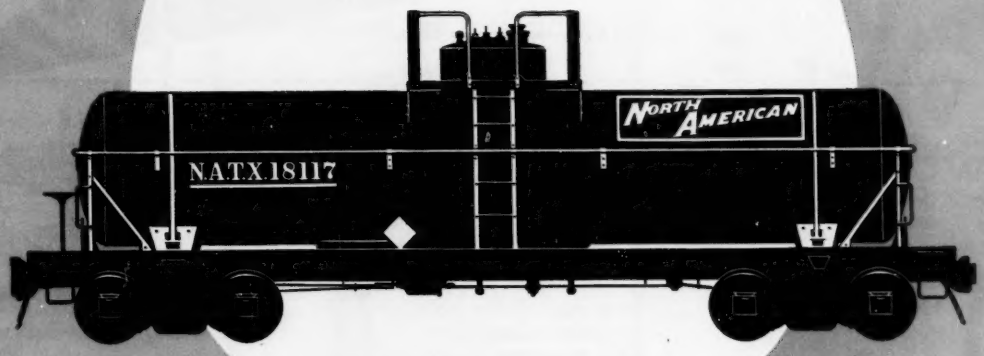

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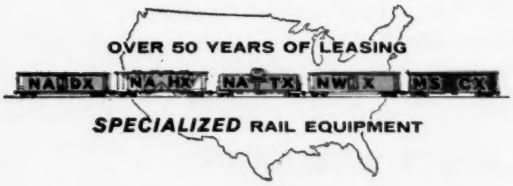

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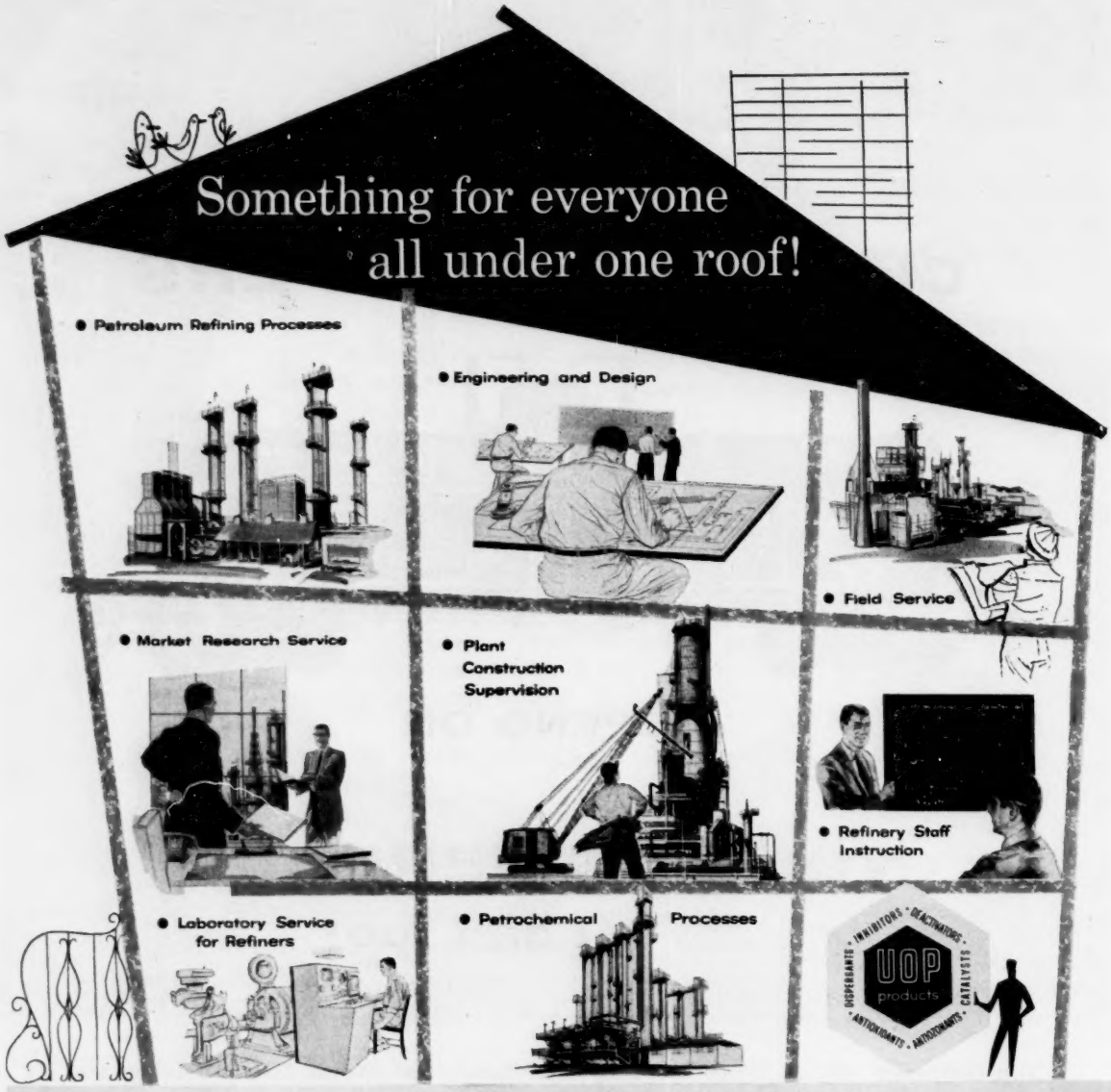
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Progress on petroleum substitutes highlights AIChE meeting

- **Gilsonite — now yields gasoline, may later provide specialty hydrocarbons.**
- **Oil shale — closer to commercialization, will compete with Mideast crude.**
- **Noncoking coals — abundant raw material for synthetic liquid fuels, char.**

Intermountain Area Previews CPI Growth

Reviews and optimistic previews of the Intermountain area's fast-growing chemical process industries highlighted last week's 38th national meeting of American Institute of Chemical Engineers in Salt Lake City's Hotel Utah. Close to 1,000 top-management men and engineers were on hand.

In all, 87 papers were presented at 27 technical sessions during the four-day event. Between sessions, conferees rounded out their visit with tours through colorful Cottonwood Canyon, a barbecue dinner in the mountains at Alpine Rose Lodge (Brighton, Utah) and side trips to the city's numerous Mormon religious sites.

Although the meeting ranged through a variety of technical subjects, it placed special emphasis on the technology of petroleum substitutes—particularly those derived from the gilsonite, oil shale and noncoking coals that abound in the Intermountain area.

• L. P. Morris, of American Gilsonite Co. (Grand Junction, Colo.), revealed some of the details of converting mined gilsonite into petroleum products, including high-grade gasoline. In addition to this use, predicted Morris, "current research on gilsonite may result in production of other specialties products." Included: waterproof coatings, varnishes, battery boxes, insulation.

• Fred Hartley, vice-president for research at Union Oil Co. (Brea, Calif.), repeated his earlier prophecy that shale oil is a potential economic competitor of Middle Eastern petroleum. "As the countries of the Middle East inevitably raise the price of this presently cheap foreign oil," said Hartley, "shale oil will be brought into the marketplace by economic forces. A future shale oil industry, then, will act as a long-term price stabilizer to offset price increases in foreign crude oil."

Hartley says, however, that he is unable to give unequivocal answers on the commercial economics of shale oil at this time. His reasons: Union Oil's studies on oil shale mining and retorting costs won't be completed until next spring; because of oversupply, present price of crude oil is depressed to the point where it's impossible to determine just what a competitive price will be.

• J. H. Field, supervisory chemical engineer with Bureau of Mines (Pittsburgh), discussed the current status of synthetic liquid fuels made by the Fischer-Tropsch process, in a paper coauthored by H. E. Benson, of Consolidated Natural Gas Co. (Cleveland), and R. B. Anderson, chief of Bureau of Mines' coal-to-oil research. Because the days of cheap natural gas are over in this country, said this trio, future synthetic fuel plants must be based on coal. And despite the reduced interest in the Fischer-Tropsch process that has followed the postwar discoveries of oil in Canada and in the Middle East, research and commercial development of such fuels is continuing. Catalyst research and bench-scale studies of synthetic fuel processes have also been continued by Bureau of Mines.

The course followed by the automobile industry, they say, will decidedly influence the synthetic fuel industry. If the gas-turbine or free-piston engine is developed for autos, they believe, the paraffin oil readily obtainable from Fischer-Tropsch syntheses, "with its high heat of combustion," will be attractive.

Char Process: Another potential boost for greater utilization of noncoking coals—bituminous and subbituminous coals and lignite—is the growing market for char. Lloyd Berg and D. E. Atkinson, both of Montana State College (Bozeman, Mont.), said that an ever-increasing demand for carbon as a reducing agent is creating a sizable market that can be filled by char.

Noncoking coals are in great abundance throughout most of the country, they note, and "char that results from their carbonization is thus readily available, seems to be an acceptable form of carbon for such processes as taconite roasting, nonferrous metal smelting and production of elemental phosphorus."

Previously, says Berg, char had to compete with coke "breeze" (fine particles). But now that coking coal is not as abundant as it once was, coking processes that produce a minimum of breeze are favored.

Safety Symposium: Another feature of the meeting was the two-day symposium on safety in air and ammonia plants, led by N. H. Walton, of The Atlantic Refining Co. (Philadelphia). Held in four separate sessions—each of which attracted 100-150 participants, including some from Belgium, Germany, Italy and

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ENGINEERING

Japan—the symposium was conducted as a group discussion of problems encountered by operating and maintenance personnel in such plants.

Chemical Challenge: In a close-to-home session on the Intermountain industries, Elroy Nelson, vice-president and economist of First Securities Corp. (Salt Lake City), challenged the chemical industries to unlock potential raw materials from the clays and other minerals in the area, to provide lower-cost processing routes and to shortcut production techniques.

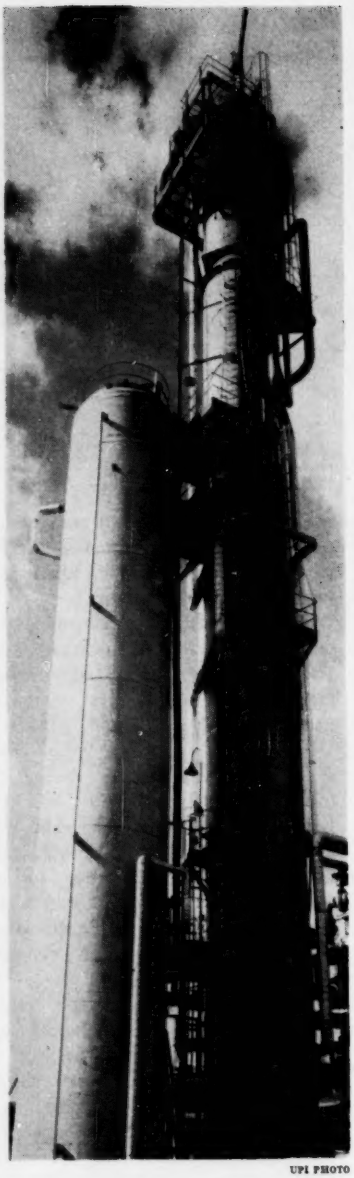
Nelson's remarks were answered, in part, in an analysis of the area's mineral reserves by V. E. Larson, of Food Machinery and Chemical Corp. (Pocatello, Ida.). Larson agreed that mineral reserves are high, but pointed out that the mineral industry is hampered by lack of transportation and by high cost of transportation in the area. And while this situation isn't likely to change appreciably in the near future, he added, new properties will go into production as local markets develop.

Larson also noted the possibility that an aluminum industry may develop in the region, as more electric power becomes available. Although there are no deposits of bauxite in the area, it does contain potentially useful alumina-rich materials. Anaconda is now testing certain clays as a possible source of alumina.

Management Pointers: Of special interest to the many management men were suggestions made for improving the utilization of chemical engineers.

Randall Meyer, of Esso Standard Oil Co. (Baton Rouge, La.), presented a case for greater use of engineering technicians to boost over-all engineering efficiency. The benefits of such a program, says Meyer, accrue to all concerned: the technician has a greater opportunity for advancement; the engineer, freed from routine work, can devote his time to more demanding and complex problems; the company gets full value from its engineering personnel; the country benefits by achieving greater advancement in technical development.

In Esso's own program at the Baton Rouge refinery, said Meyer, some 115 technicians work with 175 engineers. In the future, he added, it's likely that four technicians will be

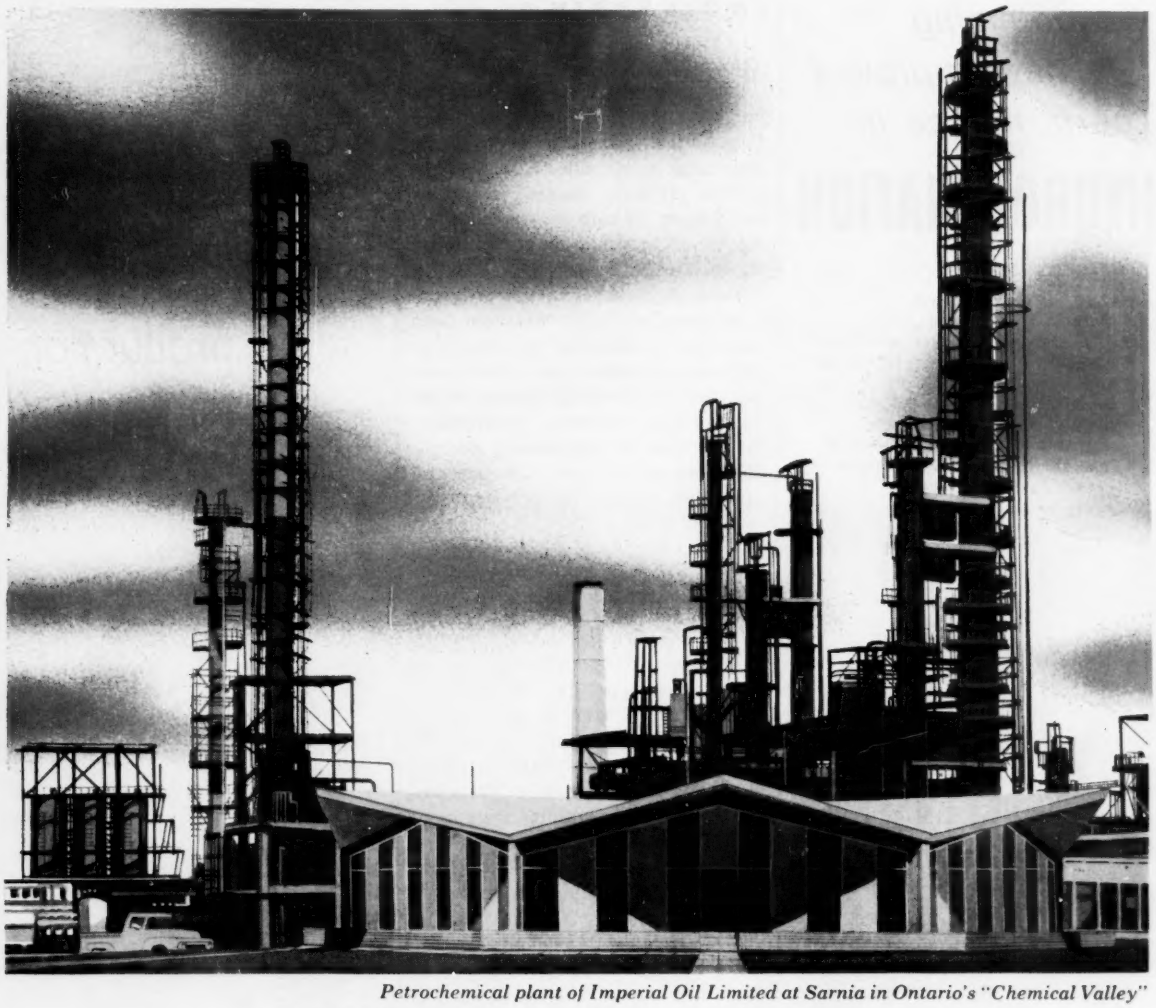


UPI PHOTO

For Purer Coal Aromatics

Rising 147 ft. above surrounding facilities is U.S. Steel's new light oil refining column at its Clairton, Pa., Works. The column is now in operation with a design capacity of 150,000 gal./day of crude coke-oven light oil.

Completion of the facility makes USS the second large steel producer (with Jones & Laughlin) to modernize its coal chemicals operation and bring its aromatic products back into active competition with petroleum-derived chemicals (*CW, Dec. 14, '57, p. 64*).



Petrochemical plant of Imperial Oil Limited at Sarnia in Ontario's "Chemical Valley"

NEW STAR OVER CANADA

The distinctively attractive and functional building in the foreground – shaped like a six-pointed star – occupies the key position as control center of Canada's most important new petrochemical facility.

This Imperial Oil Limited plant draws feed stock from the company's adjacent refinery to produce ethylene, propylene, butylenes, butadiene, aromatic distillates and tars – products that in turn become feed stocks to meet industry's insatiable demand for new products.

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ENGINEERING

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Paul Kuehler, of Humble Oil & Refing Co. (Baytown, Tex.), described a specialized, four-stage training program used by Humble to upgrade engineers: (1) initial training in a practice school; (2) early on-the-job training; (3) an academic program, including lectures in science; (4) rotational training. Advantages of this program: it facilitates the man's transition from academic to industrial pursuits, helps continue expansion of his abilities and best use of knowledge gained in initial training, provides opportunities for the man to keep abreast of new developments and advance academically, and enlarges his sphere of activities beyond those in which he normally works.

PROCESSES

Pure Silane: A method of producing pure silane, presumably for subsequent decomposition to semiconductor-grade silicon, is described in Australian patent application 35,-641/58, issued to Standard Telephones & Cables (Sydney). The silicon tetrachloride starting material is treated with a small amount of water to hydrolyze boron halides that may be present. Fractional distillation yields pure silicon tetrachloride, which is then reacted with a suitable hydride (e.g., lithium aluminum hydride) to form the silane. ST&C's parent organization, International Telephone & Telegraph (New York), recently licensed a process for the manufacture of ultrahigh-purity silicon to Du Pont *(CW, Sept. 6, p. 76)*.

•

Solid Gasoline: More information is available on the gasoline bricks developed by Soviet Academy of Sciences (*CW Technology Newsletter, July 20, '57*). The structure is said to resemble a honeycomb, with minute drops of liquid fuel encased in fine plastic films. Gasoline bars are white, while kerosene bars appear brown. Before actual use, the solid fuel is reconverted into liquid form by what is said to be a very simple press.

•

Pulp Bleaching: A new continuous system for bleaching pulps is now being offered by Dorr-Oliver Inc. (Stamford, Conn.). Engineered for each individual application, the new system centers on the Oliver Vacuum Bleach Washer.

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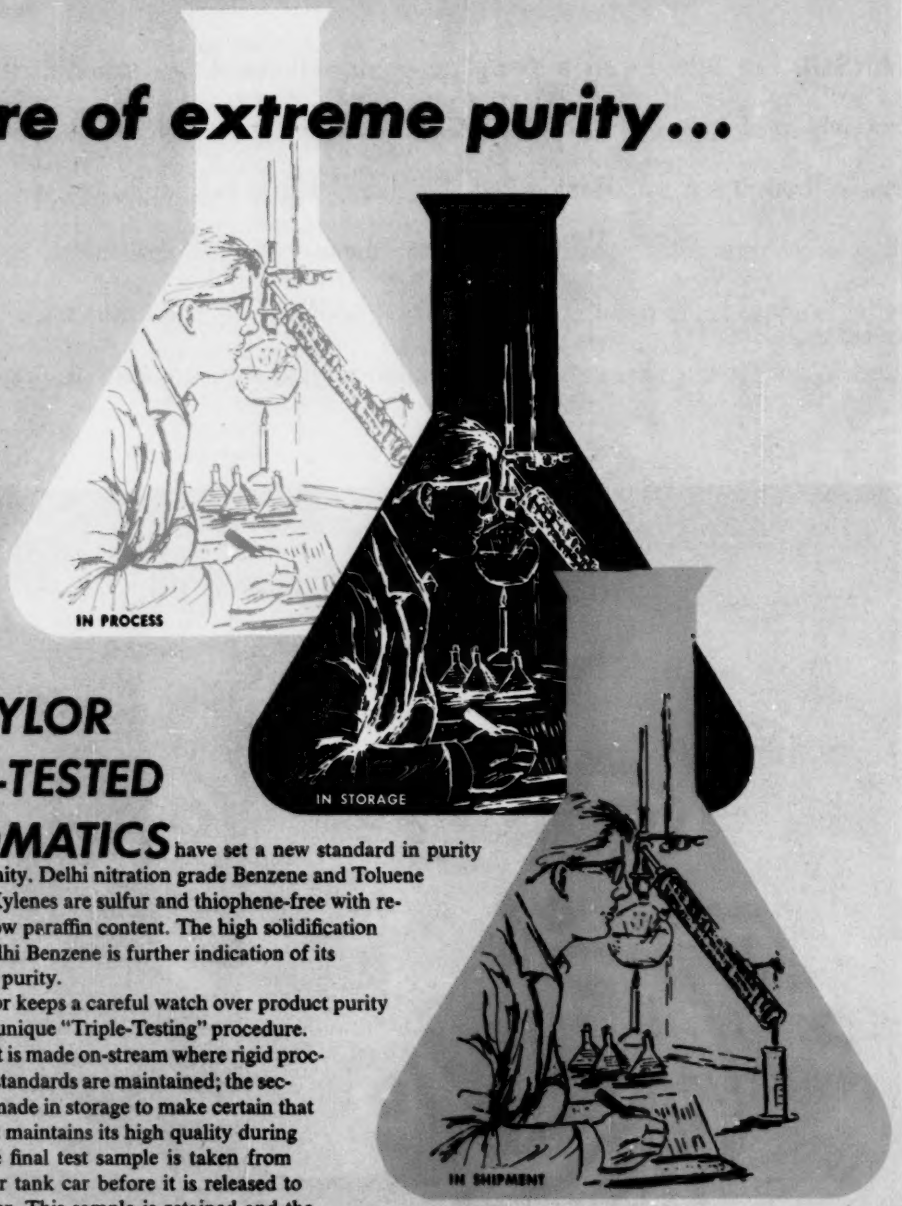

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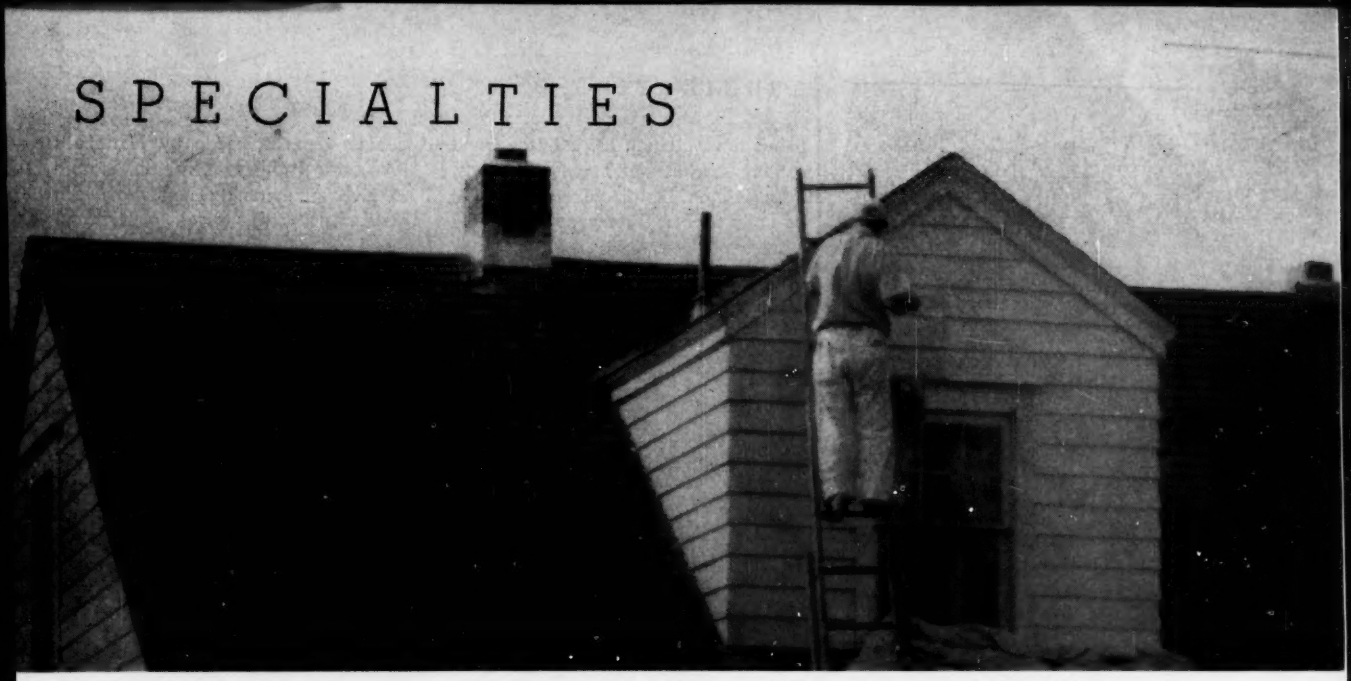

Latex paints for frame house painting may get off the ground if new Dow acrylate fulfills promise.

Latex Paints: Knocking on Wood Markets

Latex paints for wood exteriors? Dow says yes, that both primers and finish coats may be marketed soon. And at next week's Paint Industries Show in Cleveland, Dow will show its new latex for formulating exterior house paints. Surprisingly, the newcomer is not Dow-pioneered butadiene-styrene. It's an acrylate, temporarily tabbed Latex X-2647.

Latex paints long ago proved their success in outdoor applications on masonry, but covering wood has posed some problems. Wood fibers swell and shrink, cracking the paint—and latex paints have poor adhesion to wood when subjected to rigorous climatic changes. The water in the latex also increases the chances of fungus, mildew, dry rot, etc. Some water-based paints made with polyvinyl acetate have proved themselves on cedar and redwood but not on the more widely used pine.

Dow apparently feels that it has licked most of these problems and is now accelerating its preliminary test program, with a few paint formulators, into a full-scale sales effort. It's offering the new acrylic latex for a competitively attractive price of 42¢/-lb. (46% solids, delivered).

Dow, incidentally, is buying monomer now, but will have its own supply when the Dow Badische acetylene chemicals plant *(CW Business Newsletter, Sept. 27)* goes onstream at Freeport, Tex.

Its new acrylic latex, according to Dow, may be used to make a topcoat applicable over oil and alkyd coats, and may also be used to formulate primers. (Suggested formulations for a wood primer call for 781 lbs. of Latex X-2647/100 gal. of paint; topcoat calls for 506 lbs. of the latex. Pigment volume concentration is 10% and 30% respectively.)

Joins the Few: In offering its new copolymer, Dow becomes one of the few companies to offer an acrylic latex. Rohm & Haas has offered its AC-33 to formulators for about four years.

And at least one other latex maker has an acrylic in its product, and one major paintmaker produces its own acrylic latex. The acrylic latex field is thus considerably less crowded than the other latex areas. About 10 companies are turning out butadiene-styrene latexes; about 50 are producing polyvinyl acetate latexes.

But despite the small number of acrylic latex producers, acrylic latexes account for about 5% of the gallonage of water-thinned paints, compared with around 10% for vinyl acetate copolymers and 85% for butadiene-styrene.

Even with the entry of Dow into the acrylic arena, however, that proportion is not likely to change much in the near future. One reason: Dow will not try to make its acrylic latex a factor in interior finishes. The company says that for considerably less cost, satisfactory interior paints can be made with butadiene-styrene or PVAc.

Delayed Impact: There's little possibility that water-based paints will make much of an inroad into the 50-60-million-gal./year house paint market for at least two or three years. For one thing, latex paints don't have some of the clear-cut advantages over oil and alkyd exterior finishes that they have over the interior paints. Outdoors, for example, the latex paints' lack of odor is of no particular advantage over smelly paints. And, since most home exteriors are painted by professionals, ease of cleanup—a big point with the do-it-yourself interior painter—is not the selling point it is for interior latex paints.

As one paint formulator sees it, Dow will have a tough job selling the professional painter on using the new material, even if it's proved to be a superior coating (as Dow claims it is). "Whereas the average consumer," the formulator told *CW*, "greets new products in a hurry, the professional is pretty slow to meet a new idea."

Virtually all makers of butadiene-styrene and vinyl acetate copolymer

Air pollution complaints from civic authorities, calls from irate neighbors about offensive odors are now a thing of the past in many progressive plants. Workers come and go without changing clothes, without griping about the smells they carry home. Efficiency has picked up, good labor is easier to get. That's because low-cost **ALAMASK®** re-odorant chemicals have been added to the company's manufacturing operations.

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paints are watching the exterior wood coating market and have products in testing stages. Dow's current ideas will be sure to bring renewed efforts by others.

Time to Get Together

It's time for specialties makers to check their supply of business cards. The convention season's almost here. Next month (November), in Montreal, Assn. of Canadian Chemical Specialties Manufacturers will hold its first annual meeting. A month later, Chemical Specialties Manufacturers Assn. will hold its annual meeting in New York.

The Canadian group will meet at the Queen Elizabeth Hotel at Montreal Nov. 13-14. CSMA will gather at New York's Hotel Commodore Dec. 8-10. Theme of this year's New York meeting: "After you spend money making the product, will your label permit you to sell it?"

PRODUCTS

Germs Away: The trend toward incorporating bacteriostatic agents in chemical specialties got an added boost this week. Glamur Products, Inc. (Syracuse, N.Y.), is now putting Corbex into its Easy Glamur rug and upholstery cleaner. Corbex, a bacteriostatic agent made by Bex Industries (New York), is also being evaluated as a floor wax additive and as an oral hygiene aid.

•

Chain Lubricant: Lehigh Chemical Co. (Chestertown, Md.) has just come out with a new synthetic lubricant for chains. It's tradenamed Anderol L-732. Lehigh says that the new lubricant, a semifluid grease, won't gum or leave a varnish residue and will remain effective six months or longer. It's available in 10-oz. cartridges and 35-lb. pails.

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Window Frosting: Crown Industrial Products Co. (Woodstock, Ill.) is now marketing its Glass Frosting in a 16-oz. aerosol container. Crown says the frosting reduces sun glare without distorting color.

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Instant Bonder: Instant-Lok 4300, a nonflammable, water-thinned adhesive is National Starch Products' latest commercial product. The new contact cement, made by National's Structural Products Division, is said to give high-strength bonds between glass, hardboard, metal, plastic and wood surfaces.

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Plating Brightener: Hydrodyne PR, a liquid additive for copper- and brass-plating rinses, has just been put on the market by Aquadyne Corp. (Clark, N.J.). Aquadyne says its new product reduces spotting on copper- and brass-plated products, and shortens rinse time up to 50%. Hydrodyne PR costs $9/gal. in 5-gal. cans.

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Plough Buys Again: Plough, Inc. (Memphis, Tenn.), has purchased Creolin Co. of New Jersey, for an undisclosed amount of cash. Creolin makes household, hospital and industrial disinfectants. This marks the eighth acquisition by Plough in two years.

The latest purchase includes sole manufacturing and sales rights in the U.S. and its possessions for Creolin, Hycol and V-C-P, which are industrial and veterinary disinfectants. According to Plough, manufacture of the Creolin products will begin at the Plough plant in Memphis in two or three months.

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Teutonic Tape: Agfa AG., a Bayer (Leverkusen, Germany) subsidiary, has developed a new recording tape of prestretched polyester. The Agfa tape is said to have a magnetic layer embedded in a new varnish.

•

Metal Cleaner: Enthone, Inc., a subsidiary of American Smelting and Refining Co., is offering a nonflammable, phosphoric acid-type cleaner and deruster for metals. Called Enthol 59, the new product may be applied either hot or cold by dipping, brushing, swabbing or spraying.

•

Moly Lubricant: Alpha-Molykote Corp. (Stamford, Conn.) is now marketing a lubricant for values of high-temperature gas lines. The new product, Molykote Type 1102, is fortified with molybdenum disulfide powder. The company says it is resistant to a host of chemicals including propane, butane, natural gas, ethyl alcohol and concentrated hydrochloric acid.

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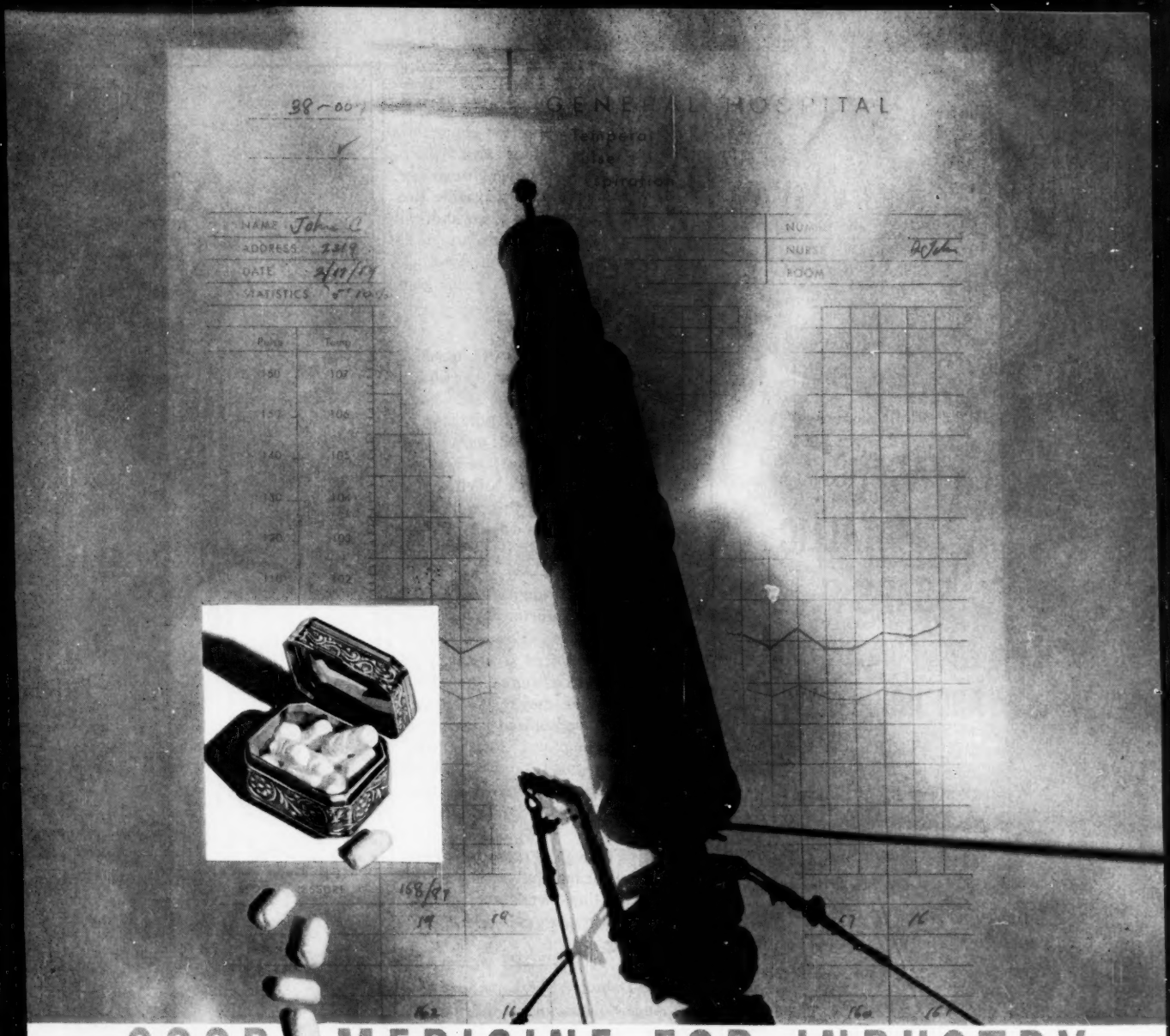
New Soap Quarterly: Soap and synthetic detergent makers have a



GOOD MEDICINE FOR INDUSTRY

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new source of information about their field. First issue of *Soaps and Syndets*, a new quarterly technical magazine, is now available. The magazine presents statistical data on soaps and syndets, U.S. patent abstracts and technical articles. It's put out by Pocketeck Publishing Co. (Washington, D.C.).

•

Chesebrough Adds Cosmetics: Chesebrough-Pond's, Inc., purchased all cosmetic interests of Vick Chemical Co. this week. The purchase includes Prince Matchabelli and Simonetta perfumes and cosmetics, Seaforth and Black Watch men's toiletries and Sofskin hand creams. Prince Matchabelli will be a wholly owned subsidiary of Chesebrough.

•

Natural Fiber Fungicides: Nuodex Products Co. (Elizabeth, N.J.), a division of Heyden Newport (New York) has announced availability of three new industrial fungicides. Odorless and colorless, they're tradenamed Fungitorol 25 (solubilized complex of cupferron), Fungitorol 50 (a synergized zinc mixture), and Fungitorol 100 (a quaternary ammonium compound).

•

Metal Coating: Enterprise Paint Mfg. Co. (Chicago) has a new epoxy finish for coating metals subjected to high temperature. It's called No. 7927 clear coating.

•

Liquid Debut: White King Soap Co. (Los Angeles) has joined the parade, come up with a heavy-duty liquid detergent concentrate called Sun. It's designed to remove heavy dirt in clothes, woodwork, floors and walls, will be sold in pint, quart and half-gallon sizes.

•

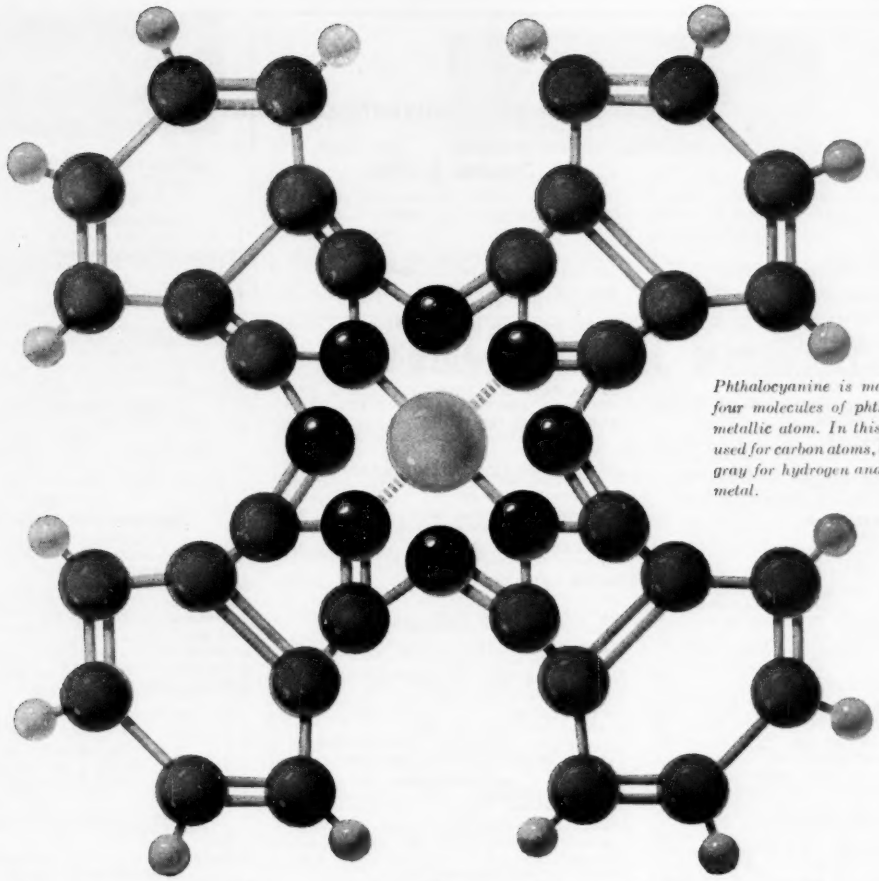
Catalyst for Urethanes: Union Carbide Chemicals (New York) is now selling a new catalyst for urethane polymers. It's tetramethyl-1,3-butanediamine, a colorless liquid soluble in water. The new amine has an exceptionally low odor level, according to UCC, and yields soft, pliable foams.

•

Nitrite Remover: Emkay Chemical's (Elizabeth, N.J.) new Rexolube AC is said to eliminate bronzing and streaking of textiles due to faulty nitrite removal following diazotizing. It's available in 300-lb. drum lots.

zone mail indeed results in speed

The Post Office has divided 106 cities into postal delivery zones to speed mail delivery. Be sure to include zone number when writing to these cities; be sure to include *your* zone number in *your* return address — after the city, before the state.



Phthalocyanine is made by combining four molecules of phthalonitrile with a metallic atom. In this diagram, blue is used for carbon atoms, black for nitrogen, gray for hydrogen and light blue for the metal.

Phthalonitrile: petals of a dye molecule

In a kind of chemical hoedown, phthalonitrile molecules *form a ring around an atom to create a flower-like dye molecule. This unique reaction is but one of the fascinating properties that make phthalonitrile so promising commercially.*

Take a benzene ring and replace two adjacent hydrogen atoms with CN radicals and you have *phthalonitrile*, now commercially produced by Plastics and Coal Chemicals Division of Allied Chemical. Probe more deeply and you will find the mark of a good intermediate. Those CN radicals have a talent for hooking up with passing molecules, yielding enough new and different compounds to keep your applications lab busy for months.

Given the chance, phthalonitrile molecules will join to form a ring around a central atom of copper or some other metal. (You see it happening in the kaleidoscope pattern above.) This reaction results in a resonating structure of remarkable stability and inertness, and can be used to create a whole family of fast blue-green pigments and dyes—the *phthalocyanines*. Their formidable tinting power and unfading brilliance have been gratefully seized upon by color makers in the printing, plastics, paint and other industries. Now—just as they are coming into widespread use—along comes phthalonitrile to provide a simple, labor-saving method of manufacture.

Phthalonitrile also has some tantalizing properties of its own. Its buff-colored crystals have been suggested as a pesticide and, when hydroxylated, as a desensitizer and preserving agent for photographic developers.

You take it from there. Tell us what you need to investigate phthalonitrile. Write on company letterhead for prices, sample, or developmental quantities. In Canada: Allied Chemical Canada, Ltd., 1450 City Councillors St., Montreal.

PLASTICS AND COAL CHEMICALS DIVISION
Formerly part of the Barrett Division
40 Rector Street, New York 6, N. Y.

Allied Chemical

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with factories in Montreal & Toronto wishes to make new products under license from U. S. A. firms.

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DIV. OF ACETO CHEMICAL CO., INC.
40-40C Lawrence St., Flushing 54, N. Y.
INdependence 1-4100

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FOR SALE

Graver 750 gal. stainless steel fermenters: ASME 30# i.w.p., 30# jacket, 10 HP XP turbine agit. Perry, 1415 N. 6th St., Phila. 22, Pa.

Hardinge 4'6" x 16" conical ball mill, bolted liners, feeders, screens, 25 HP drive. Perry Equip. Corp., 1415 N. 6th St., Phila. 22, Pa.

Niagara stainless steel pressure leaf filters: #510-28, 500 sq. ft.; #36H-110-3, 100 sq. ft. horiz.; #80-30, 76.8 sq. ft., jacketed; #45-30, 45 sq. ft. Perry, 1415 N. 6th St., Phila. 22, Pa.

Tank Trailers for Chemicals Stainless Steel new and used. Hackett Tank Company, Inc. P.O. Box 803, Packers Sta., Kansas City, Kas. Mayfair 1-2363.

New Sola constant voltage transformer, cat. no. 30768 output 115 v. up to 17.4 A—$150.00—Mac Millan Laboratories, Inc., 112 Mills Street, Atlanta 13, Georgia.

For Sale—10 drs. Butyrolactone 20¢/lb.; 50 drs. Redist. Chloroform 7¢/lb.; 50 drs. Sec. Amyl Alcohol 8¢/lb.; 20,000 gals. (bulk) Lacquer Thinner, 45% Ketone-Ester/55% Toluol-Xylol 35¢/gal. Chemsol, Inc., 74 Dod St., Elizabeth 3, N.J., FLanders 1-2020.

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SAN FRANCISCO 4: 68 Post St.

SELLING OPPORTUNITIES WANTED

Canadian Manufacturer's Agent, chemical background, represented in Windsor, Toronto, Montreal, seeks additional lines. Presently distributing Ammonia. RA-8810, Chemical Week.

Mfgr's rep. in New England area desires Industrial chemicals, paper chemicals, or process equipment. RA-8899, Chemical Week.

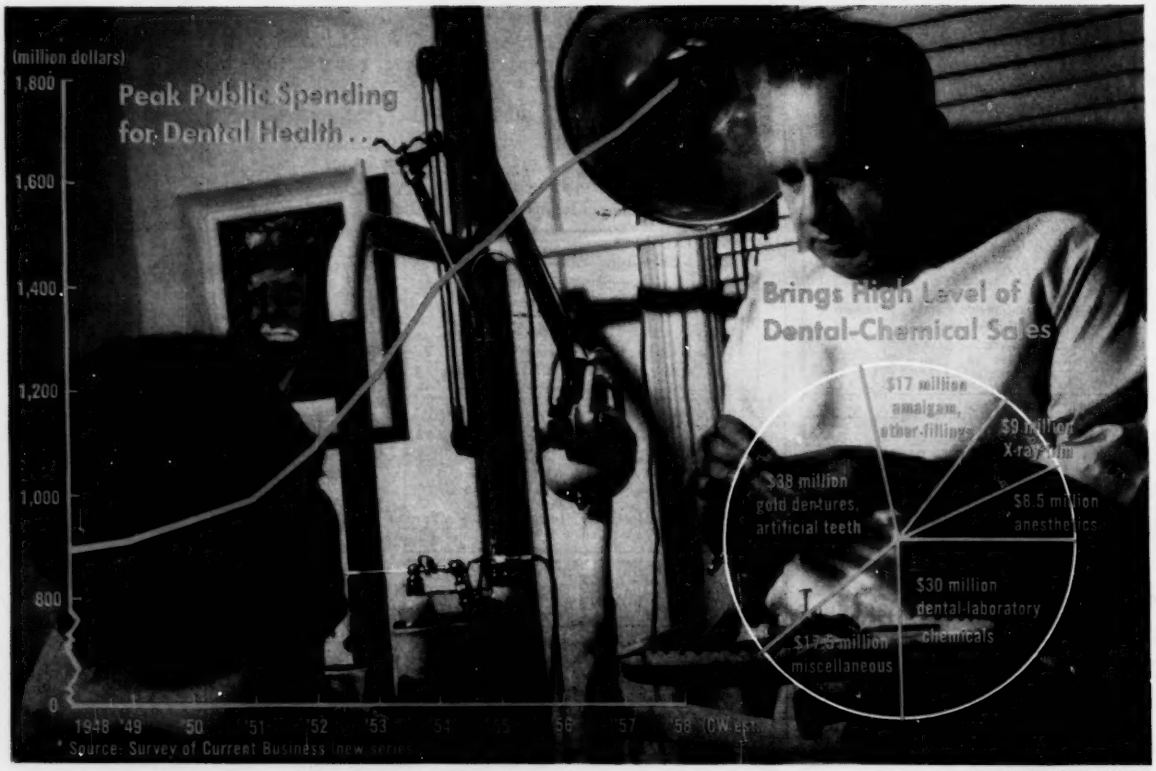
POSITION WANTED

General Manager available in October. Registered chemical engineer with management, sales development, R & D and production experience in textiles, plastics, synthetic rubber and organic chemicals. Age 34. Salary $11,000. P.O. Box 165, Berea, Ohio.

SELLING OPPORTUNITY WANTED

Chemical Engineer setting up as Manufacturer's Representative in Cleveland, Ohio invites inquiries of companies desiring representation in NE Ohio. P.O. Box 165, Berea, Ohio.

Don't Forget
the box number when answering advertisements. It's the only way we can identify the advertiser to whom you are writing.



CW PHOTO—LIONEL CRAWFORD

Dental Care: $120-Million Chemical Outlet

Makers of chemicals and allied products will be taking a big chunk of the estimated $1.8 billion the U.S. public will spend this year for dental care. According to trade sources, the dentists and dental laboratories that actually purchase the chemical supplies will require more of these materials this year—about $120 million worth.

Last year, when U.S. citizens laid out $1.7 billion for dental hygiene, some $115 million went for chemical supplies.

American Dental Trade Assn. estimates that major portions of this year's $120-million bill for chemicals will be spent like this:

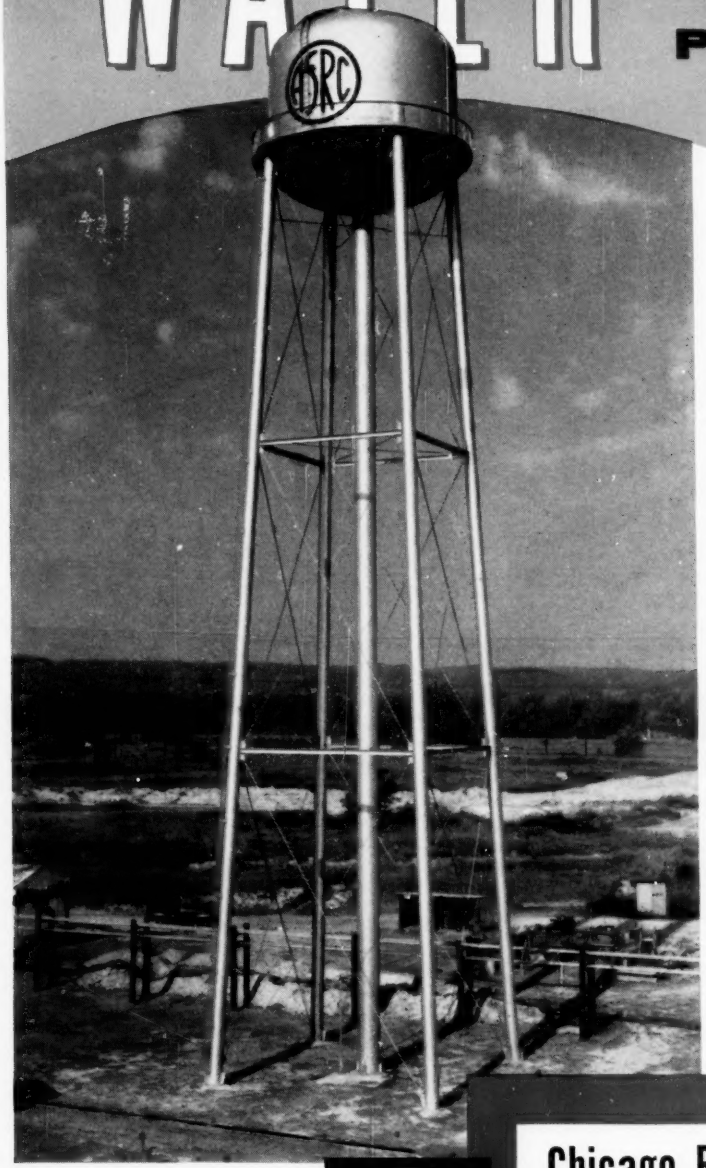
- About $17 million for amalgam, silicate, acrylic fillings.
- $8.5 million for anesthetics. Lidocaine and procaine, propoxycaine- and butethamine-hydrochloride formulations make up the bulk of the anesthetic cartridges used in dentistry today.
- $9 million for X-ray film.

There is, in addition, a substantial market for acrylic, vinyl and styrene resins for making replacement teeth and bridges.

Dentists also buy large quantities of drugs, such as analgesics and sedatives and specialties such as astringents, disinfectants and germicides.

American Synthetic Rubber Corporation has

WATER for FIRE PROTECTION



...when and where they need it

No plant can afford a fire! A Horton® elevated tank connected to an automatic sprinkler system provides maximum plant protection for American Synthetic Rubber Corporation, Louisville, Kentucky. Water is ready to flow by unfailing gravity pressure day or night to quench fires *before* they cause widespread damage.

A Horton elevated tank provides a dependable water supply for fire protection, unaffected by fluctuating pressures often prevalent in municipal systems. And, because of reduced insurance premiums, the elevated tank investment can often be amortized in a few years.

Write our nearest office for further information on Horton elevated tanks and other storage tanks required by the chemical industry.

Above: 100,000-gallon Horton ellipsoidal-bottom elevated tank 125-ft. to bottom, built for sprinkler service at American Synthetic Rubber Corporation, Louisville, Kentucky.

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Chicago Bridge Limited, London; Chicago Bridge Construcoes Ltda., Rio de Janeiro
REPRESENTATIVES AND LICENSEES:
Australia, Cuba, England, France, Germany, Italy, Japan, Netherlands, Scotland

Planning to manufacture chemicals abroad ?

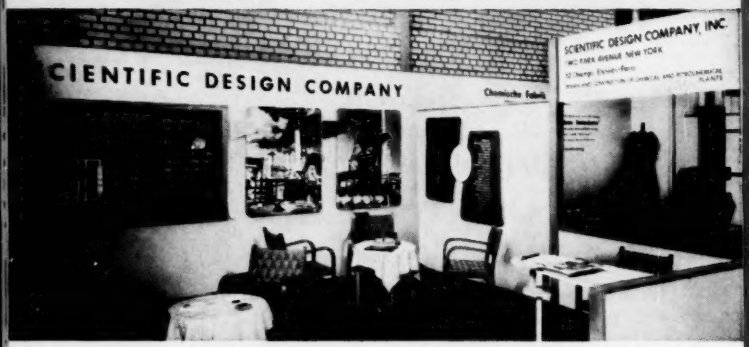
SD GROUP

is also on the scene in EUROPE

serving organizations such as these:

SD ist auf dem Schauplatz in DEUTSCHLAND

- Chemische Fabrik Holten (through Badische Anilin-& Soda-Fabrik)—Ethylene Oxide
- Erdoelchemie (through Farbenfabriken Bayer)—Ethylene Oxide



SD was the only American engineering company participating in the recent Achema 1958 Chemical Engineering Exposition in Frankfurt, Germany — Europe's largest chemical engineering and equipment show.

SD est présent en FRANCE

- Compagnie Française des Matières Colorantes—Maleic Anhydride
- Marles-Kuhlmann—Ethylene Oxide
- Naphtachimie—Ethylene Oxide
- Péchiney—Perchloroethylene

SD is on the scene in GREAT BRITAIN

- British Hydrocarbon Chemicals, Ltd.—Cumene
- Imperial Chemical Industries, Ltd.—Terephthalic Acid

SD est présent en BELGIQUE

- Centre National de Production et d'Etude des Substances d'origine Microbienne, Ministère de l'Instruction Publique—Antibiotics
- Société Chimique des Dérivés du Pétrole—Ethylene Oxide-Glycol

SD voert werken uit in NEDERLAND

- Noury and van der Lande—Citric Acid

SD e all'opera in Italia ITALIA

- Ftalital S.p.A.—Maleic Anhydride
- Societa Montecatini—Chlorination

Profit by using SD's unique combination of American and international experience to design and build your chemical plants abroad.

SD's affiliated European organization—Société Francaise des Services Techniques S.a.r.l. (SFST) 52 Champs Elysees, Paris (8e), France—offers complete design and construction services abroad.

Scientific Design Company, Inc.

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SD153